

MINISTRY OF SCIENCES AND HIGHER EDUCATION OF THE REPUBLIC OF  
KAZAKHSTAN

M.O. AUEZOV SOUTH KAZAKHSTAN UNIVERSITY

«APPROVED»

Chairman of the board -

Rector \_\_\_\_\_

Doctor of historical sciences,

Academician, Kozhamzharova D.P.

«\_\_» \_\_\_\_\_ 2023

**EDUCATION PROGRAM**

**8D01503 - «Computer science»**

Registration Number	8D01500002
Code and Classification of Education	8D01-Pedagogical Sciences
Code and Classification of Areas of Training	8D015-Teacher training in natural science subjects
Group of educational programs (EP)	D012 - Training of computer science teachers
Type of EP	Acting
ISCE level	8
NQF level	8
IQF level	8
Language learning	Kazakh, Russian
The complexity of EP	180 credits
Distinctive features of EP	-
Partner University (JEP) -	-
University partner (DDEP) -	-

Shymkent, 2023

Developers:

<b>Full Name</b>	<b>Position</b>	<b>Signature</b>
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The EP was considered in the direction of training in pedagogical sciences at a meeting of the academic committee, Minutes # \_\_\_\_\_ « » \_\_\_\_\_ 202\_\_ y.

Chairman of the AC \_\_\_\_\_ Urazbaev K.M.

The EP was considered and recommended for approval at Educational-methodical meeting of M. Auezov SKU

Minutes # \_\_\_\_\_ « » \_\_\_\_\_ 202\_\_ y.

Chairman of the Educational and Methodological Council \_\_\_\_\_ R. Abisheva

The EP was approved by the decision of the Academic Council of the University

Minutes # \_\_\_\_\_ « » \_\_\_\_\_ 202\_\_ y.

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## 1. CONCEPT OF THE PROGRAM

<b>University Mission</b>	Generation of new competencies, training of a leader who translates research and entrepreneurial thinking and culture
<b>University Values</b>	<ul style="list-style-type: none"> <li>• Openness—open to change, innovation and cooperation.</li> <li>• Creativity – generates ideas, develops them and turns them into values.</li> <li>• Academic freedom – free to choose, develop and act.</li> <li>• Partnership – creates trust and support in a relationship where everyone wins.</li> <li>• Social responsibility – ready to fulfill obligations, make decisions and be responsible for their results.</li> </ul>
<b>Graduate Model</b>	<ul style="list-style-type: none"> <li>• Deep subject knowledge, their application and continuous expansion in professional activity.</li> <li>• Information and digital literacy and mobility in rapidly changing conditions.</li> <li>• Research skills, creativity and emotional intelligence.</li> <li>• Entrepreneurship, independence and responsibility for their activities and well-being.</li> <li>• Global and national citizenship, tolerance to cultures and languages.</li> </ul>
<b>The uniqueness of the educational program</b>	<ul style="list-style-type: none"> <li>• Orientation to the regional labor market and social order through the formation of professional competencies of the graduate, adjusted to meet the requirements of stakeholders.</li> <li>• Practical orientation and emphasis on the development of critical thinking and entrepreneurship, the formation of a wide range of skills that will allow you to be functionally literate and competitive in any life situation and be in demand in the labor market.</li> </ul>
<b>Academic Integrity and Ethics Policy</b>	<p>The University has taken measures to maintain academic integrity and academic freedom, protection from any kind of intolerance and discrimination:</p> <ul style="list-style-type: none"> <li>• Rules of academic integrity (Minutes of the Academic Council No. 3 dated 30.10.2018);</li> <li>• Anti-Corruption Standard (Order No. 373 n/a dated 27.12.2019).</li> <li>• Code of Ethics (Protocol of the Academic Council No. 8 of 31.01.2020).</li> </ul>
<b>Regulatory and legal framework for the development of EP</b>	<ol style="list-style-type: none"> <li>1. Law of the Republic of Kazakhstan "On Education";</li> <li>2. Standard rules of activity of educational organizations implementing educational programs of higher and (or) postgraduate education, approved by Order of the Ministry of Education and Science of the Republic of Kazakhstan dated October 30, 2018 No. 595</li> <li>3. State mandatory standards of higher and postgraduate education, approved by the Order of the Ministry of Education and</li> </ol>

	<p>Science of the Republic of Kazakhstan dated October 31, 2018 No. 604;</p> <p>4. Rules for organizing the educational process on credit technology of education, approved by order of the Ministry of Education and Science of the Republic of Kazakhstan dated April 20, 2011 No. 152;</p> <p>5. Qualification directory of positions of managers, specialists and other employees, approved by order of the Minister of Labor and Social Protection of the Population of the Republic of Kazakhstan dated December 30, 2020 No. 553.</p> <p>6. Guidelines for the use of ECTS.</p> <p>7. Guidelines for the development of educational programs for higher and postgraduate education, Appendix 1 to the order of the Director of the Center for the Bologna Process and Academic Mobility No. 45 o / d dated June 30, 2021</p>
<b>Organization of the educational process</b>	<ul style="list-style-type: none"> <li>• Implementation of the principles of the Bologna Process</li> <li>• Doctoral-centered learning</li> <li>• Availability</li> <li>• Inclusivity</li> </ul>
<b>Quality assurance of the Educational program</b>	<ul style="list-style-type: none"> <li>• Internal quality assurance system</li> <li>• Involvement of stakeholders in the development of the EP and its evaluation</li> <li>• Systematic monitoring</li> <li>• Updating the content (updating)</li> </ul>
<b>Requirements for applicants</b>	<p>Installed in accordance with the Standard rules for admission to training in educational organizations that implement educational programs of higher and postgraduate education, order of the Ministry of Education and Science of the Republic of Kazakhstan No. 600 dated October 31, 2018.</p>

## 2. PASSPORT OF THE EDUCATIONAL PROGRAM

<b>Purpose of the EP</b>	Training of highly qualified, competitive and professional - mobile doctor PhD , able to contribute their own original research to expand the boundaries of knowledge in the field of IT-technologies and information education.
<b>Tasks of the EP</b>	<ul style="list-style-type: none"> <li>• providing conditions for the acquisition of high-quality fundamental, professional education, deep specialized knowledge in the subject area of computer science, systematic theoretical knowledge and practical skills in relevant areas of development of computer science and methods of teaching computer science;</li> <li>• instilling the skills of independent scientific research, expertise and analysis of scientific problems and continuous professional development throughout life;</li> <li>• development of skills in organizing, planning and conducting research, the ability to apply them in research, teaching and leadership activities;</li> <li>• involvement in research and innovative activities of the scientific and pedagogical direction of</li> </ul>
<b>Harmonization of EP</b>	<ul style="list-style-type: none"> <li>• 8th level of the National Qualifications Framework of the Republic of Kazakhstan;</li> <li>• Dublin descriptors of the 8th level of qualification;</li> <li>• 3 cycle of the Qualification Framework of the European Higher Education Area (A Frame work for Qualification of the European Higher Education Area);</li> <li>• 8 level of the European Qualification Framework for Lifelong Learning (The European Qualification Framework for Life long Learning).</li> </ul>
<b>Connection of the EP with the professional sphere</b>	Sectoral qualifications framework for the sphere "Education" of the Ministry of Education and Science of the Republic of Kazakhstan No. 3 dated November 27, 2019. Professional standard "Teacher", approved by the National Chamber of Entrepreneurs of the Republic of Kazakhstan "Atameken" No. 133 dated June 8, 2017.
<b>Name of the degree awarded</b>	Persons, who have mastered the EP of doctoral studies and defended a doctoral dissertation, with a positive decision of the dissertation councils of the OHPE with a special status or the Committee for Quality Assurance in Education and Science of the Ministry of Science and Higher Education of the Republic of Kazakhstan, are awarded the PhD degree on the EP 8D01503 - «Computer science»
<b>List of qualifications and positions</b>	Manager in research institutions, design and design organizations, computer science teacher in higher educational institutions, methodologist in education departments, senior researcher, head of a research group in research institutes, laboratories and centers using computer modeling methods, leading specialist in management organizations
<b>Field of professional activity</b>	Science and education, which includes pedagogical, research, organizational and managerial work related to the use of IT technologies.
<b>Objects of professional activity</b>	<ul style="list-style-type: none"> <li>• higher educational institutions of state and non-state profile;</li> <li>• public administration bodies in the field of education and natural sciences;</li> <li>• research centers, institutes and laboratories;</li> <li>• banking and financial structures;</li> </ul>

	<ul style="list-style-type: none"> <li>• control and analytical service organizations, standardization and certification centers.</li> </ul>
<b>Subjects of professional activity</b>	<ul style="list-style-type: none"> <li>• systems of theoretical knowledge on the theory and methods of teaching in the disciplines of IT technologies;</li> <li>• methods and mechanisms of commercialization of research results;</li> <li>• systems of practical skills for the development of educational and methodological complexes of IT-technology disciplines and disciplines on the methodology of teaching computer science;</li> <li>• systems of higher school pedagogy;</li> <li>• education management systems;</li> <li>• development of educational and methodological documentation of the study;</li> <li>• application of international cooperation in the professional sphere.</li> </ul>
<b>Types of professional activity</b>	<ul style="list-style-type: none"> <li>• scientific research and research;</li> <li>• scientific and pedagogical;</li> <li>• production and technological;</li> <li>• organizational and managerial;</li> <li>• experimental research;</li> <li>• educational as a teacher in higher educational institutions of state and non-state profile.</li> </ul>
<b>Learning outcomes</b>	<p><b>LO1.</b> Demonstrate knowledge of a foreign language in interpersonal communication, professional activities, writing scientific articles.</p> <p><b>LO2.</b> Organize, plan and implement the research process, analyze, evaluate and compare various theoretical concepts in the field of IT-technologies and draw conclusions.</p> <p><b>LO3.</b> To process and analyze information from various sources, generate their own new scientific ideas, communicate their knowledge and ideas to the scientific community, expanding the boundaries of scientific knowledge in the field of computer science.</p> <p><b>LO4.</b> Choose and effectively use modern research methodology, plan and forecast your further professional development.</p> <p><b>LO5.</b> Demonstrate a systematic understanding of the field of computer science, skills in terms of skills and research methods used in the field of information technology.</p> <p><b>LO6.</b> Solve professional problems using modern educational and information technologies, introduce into practice modern approaches in computer science education to achieve the best results.</p> <p><b>LO7.</b> Know the development trends of computer networks and multimedia technologies, technologies for creating applications for the Internet, technologies for developing electronic educational resources.</p> <p><b>LO8.</b> Possess the skills of theoretical and experimental research in the field of natural and pedagogical sciences, scientific public speaking and their use in professional activities.</p>

### 3. COMPETENCES OF THE GRADUATE

<b>SOFT SKILLS. Behavioral skills and personality qualities</b>	
SS 1. Competence in managing one's own literacy	SS 1.1. The ability to solve problems of their own professional and personal development; OK1.2. The ability to use logical thinking to make decisions and implement them in practice
SS 2. Language competence	SS 2. The ability to possess the skills of scientific communication in a foreign language, competent communication in scientific and professional activities.
SS 3. Research Competence and Competence in the field of Science	SS 3. To know the methods of research, collection and processing of information, to see the results of research, to determine the relevance and necessity of research. To use the results of scientific research in the educational process
SS 4. Digital competence, technological literacy	SS 4. The ability to be productive in the subject area on the basis of information and computer technologies, relying on existing experience and constantly improving and expanding its boundaries
SS 5. Personal, social and academic competencies	SS 5.1. The ability to creatively analyze and evaluate modern scientific achievements, modern problems and prospects of socio-economic development of Kazakhstan; SS 5.2. The ability to generate ideas, predict the results of innovative activities, implement large-scale changes in the professional and social sphere
SS 6. Entrepreneurial competence	SS 6.1. The ability to develop creative and entrepreneurial skills of the team, to be prepared for the implementation of management functions and to solve professional problems in the interests of the organization as a whole based on a deep understanding of the features of the market economy, the functions and economic role of the state; SS 6.2. The ability to manage complex production processes and scientific projects with decision-making in conditions of uncertainty and risk.
SS 7. Cultural awareness and ability to express yourself	SS 7. Ability to demonstrate awareness of social responsibility and commitment to civilized ethical standards of behavior in scientific work and business
<b>PROFESSIONAL COMPETENCIES (HARD SKILLS).</b>	
Theoretical knowledge and practical skills specific to this area	PK1. Have an idea about scientific schools in the field of computer science, their theoretical and practical developments, about scientific concepts of world and Kazakh science in the field of IT technologies;
	PK2. To know and understand modern trends, trends and patterns of development of domestic science in the context of globalization and internationalization, methodology of scientific knowledge, achievements of world and Kazakh science in the field of IT technologies;
	PK3. Be able to plan, develop, implement the process of scientific research, critically analyze, evaluate and compare new and complex ideas, apply innovative methods and organizational forms of computer science education;
	PK4. Possess the skills of scientific public speaking, organization of scientific events, protection of intellectual rights, use of modern approaches to teaching computer science, new information and educational technologies;
	PK5. To be able and competent in the further development of the educational environment of the 21st century, in new theoretical methods and models of teaching computer science, informatization of education at various stages of education and levels of education.

#### 3.1 MATRIX OF CORRELATION OF EP LEARNING OUTCOMES IN GENERAL WITH MODULES FORMED BY COMPETENCIES

	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8
SS 1	+	+	+		+	+	+	+
SS 2				+	+	+	+	+
SS 3	+	+	+	+				



SS 4	+	+		+	+	+	+	+
SS 5	+	+		+	+	+	+	+
SS 6	+	+		+	+	+	+	+
SS 7	+	+		+	+	+	+	+
PC1	+	+		+	+	+	+	+
PC2	+	+		+	+	+	+	+
PC3	+		+	+	+	+	+	+
PC4	+	+		+	+	+	+	+
PC5	+	+	+	+	+	+	+	

#### 4. MATRIX OF THE INFLUENCE OF MODULES AND DISCIPLINES ON THE FORMATION OF LEARNING OUTCOMES AND INFORMATION ON LABOR INTENSITY

Module name	CY CL E	Co mpo nent	Name of the component	Brief description of the discipline	Amount of credits	Formed learning outcomes (codes)								
						LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	
<b>Methodological training</b>	BD	HsC	Fundamentals of Academic Writing	Objective: to develop relevant competencies among doctoral students aimed at forming the readiness and ability of scientific and pedagogical personnel to implement their own research projects and present their results in writing in accordance with the norms of the international academic community. Content: Features of academic discourse: style, genres, problems. Formulation of a research question. The structure of the introduction and its role in presenting the results of scientific work. Design of the bibliography and reference apparatus. Types of annotations and features of their compilation. Reviewing a scientific text.	3	v	v	v						
	BD	HsC	Research methods	Objective: to develop the skills of research activities; to introduce doctoral students to scientific knowledge, readiness and ability to conduct research. Contents: Basic concepts, terminology and definitions of science. Classification of sciences. Methodological foundations of scientific knowledge. Empirical and theoretical levels of scientific knowledge. Organization of research. General information about R&D, OCD, UIRS. Methods of scientific research.	4	v			v	v				

				The choice of the topic and the main stages of research. Organization of research. Processing of experimental data. Economic and mathematical modeling. Registration of research results. Justification of the feasibility of implementing the results of research. Drawing up a research program. The path of scientific search based on the proposed hypothesis. Original ways to implement scientific tasks.									
	BD	EC	Actual issues of theoretical informatics	Objective: to form a based understanding of the relevance and scientific novelty of their research in the context of theoretical and applied problems of modern computer science and trends in the development of IT technologies. Contents: History, methodology and philosophy of computer science. Overview of the well-known classifications of information sciences. Information revolutions and ITO (Information technology training). Information theory and L. Floridi's problems. The mathematical theory of communication by K. Shannon. Information theory in biology. Metaphor of information in evolutionary biophysics	6					v	v		
	BD	EC	Actual issues of informatization of education in High school and at school	Objective: to train specialists of pedagogical universities who know the methodology, technologies and means of informatization of all types of educational activities. Contents: Introduction to informatization of education. Technical means of informatization. Technologies informatization of education. Internet in education. Methods of informatization of educational activities. Development of learning informatization tools. Information educational environment and information educational space. Factors of formation of teachers' readiness to use means and methods of informatization.	6			v				v	

			Pedagogical practice	Objective: Pedagogical practice forms practical skills for mastering teaching methods in higher education. The student must participate in the educational process and scientific and pedagogical activities of the graduating department, which develops his pedagogical abilities during lectures, laboratory and practical classes.	10								
	PD	EC	Methodological aspects of IT technology	Objective: Teaching theory, methods and technologies in the field of IT infrastructure development and management, management and development of IT infrastructure of various profiles and scales, as well as the formation of practical skills for the effective construction and modernization of IT infrastructure. Content: IT technologies in the activities of organizations of various directions. Architecture and business architecture of IT technologies of the enterprise. Development of information technologies at the present stage. Client-server systems. Data processing centers. Integration of information technologies in business processes. Architecture of computer systems. The organization's IT infrastructure is an explanatory apparatus. The role and functions of the IT infrastructure in the organization's activities. Principles of enterprise IT infrastructure management. Fundamentals of process management of information technologies. Methods of modeling IT processes of the organization. Equipment and management systems of the organization's IT infrastructure. IT infrastructure management tools and systems. Tools for managing the IT infrastructure of small and medium-sized enterprises. Ensuring the security of the IT infrastructure.	6		<b>v</b>		<b>v</b>				<b>v</b>

	PD	EC	IT project management	Objective: To acquire theoretical knowledge and practical skills in the field of management of the implementation of IT projects of various types and complexity. Content: Theoretical foundations of project activity. Project definition. Its main characteristics and measurements. Elements of project activity. Classification of projects. Project management content and processes. Technology of project activity: the life cycle of the project, its main stages. Methodology and methodology of pre-project analysis (situation analysis). Project integration (content) management. Mobilization of project resources. Managing time, cost, quality, team, communications, project risks. Project monitoring and impact assessment. Change management and project completion.	6		v			v			v
	PD	EC	Computer processing and analysis of knowledge assessment	Objective: To develop a quality control system for the acquired knowledge and skills in the educational process. To study the advantages and disadvantages of traditional and new methods of monitoring the evaluation of learning outcomes in the educational process. To create a system of scientifically-based verification of learning outcomes, to establish the difference between the actual and planned level of development of the curriculum. Contents: Types of knowledge testing, basic properties of computer tests, An overview of the capabilities of programs for creating computer tests. The possibilities of using computer testing in assessing the quality of training. Using an automatic system for registration and evaluation analysis.	6						v	v	

	PD	EC	Information and knowledge management	Objective: To get an idea of the basic provisions of knowledge management; to acquire theoretical knowledge and practical skills in applying techniques and methods of knowledge management; to develop the skills of diagnostics and measurement of intellectual capital using process models of knowledge management. Content: The role of knowledge in the modern economy. Knowledge management as a field of practical activity. Methods of research and measurement of intellectual capital. Knowledge management technologies. Industry-specific features of knowledge and intellectual capital management. Principles and priorities of state regulation of the knowledge economy.	6						v	v	v	
			Research practice	Develops the skills of conducting a detailed analysis of scientific and technical information in the field of production of building materials, products and structures for the purpose of scientific, patent and marketing support of ongoing research, the ability to experiment and summarize the results of research work in the form of scientific publications, defend their position during the discussion and make professional decisions	10									
			Research work of a doctoral student, including internship and doctoral dissertation	Considers the main directions of improvement of technological machines and equipment in various fields of industry. Allows you to conduct an analytical review of the literature on the topic of a doctoral dissertation, as well as conduct experimental research on experimental installations. Develops the skills of using information technologies and computer programs when searching for information, as well as processing research results. Develops and deepens the experience of performing research work.	123									

			<p>Writing and defending a doctoral dissertation</p>	<p>To achieve the goals of the doctoral dissertation, the graduate solves the following tasks: examines normative legal acts, scientific and methodological literature of domestic and foreign authors for the theoretical substantiation of the essence of the problem under study; collects, summarizes and analyzes specific data on the subject of the work in accordance with the subject of the doctoral dissertation. In conclusion, the design and defense of the dissertation.</p>	12									
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**5 SUMMARY TABLE REFLECTING THE VOLUME OF MASTRED CREDITS IN THE CONTEXT OF MODULES OF THE STUDY PROGRAM**

Course of Study	Semester	Number of mastered modules	Number of disciplines studied			Number of credits KZ					Total hours	Total credits KZ	Number	
			EC	UC	EC	Theoretical training	Pedagogical practice	RWMS	Research practice	Final attestation			Exam	Cr.test
1	1	2		2	3	25	-	-	5	-	900	30	6	1
	2	1		-	-	-	10	-	20	-	900	30	-	2
2	3	1		-	-	-	-	10	20	-	900	30	-	2
	4	1		-	-	-	-	-	30	-	900	30	-	1
3	5	1		-	-	-	-	-	30	-	900	30	-	1
	6	1		-	-	-	-	-	18	12	900	30	-	1
<b>Total</b>		7		2	3	25	10	10	123	12	5400	180	6	8



## 6. STRATEGIES AND METHODS OF TEACHING, MONITORING AND EVALUATION

<p><b>Learning Strategies</b></p>	<p><b>Doctoral-centered learning:</b> The student is the center of teaching/learning and an active participant in the learning and decision-making process.</p> <p><b>Practice-oriented training:</b> orientation to the development of practical skills.</p>
<p>Teaching methods</p>	<p>Conducting lectures, seminars, various types of practices:</p> <ul style="list-style-type: none"> <li>• application of innovative technologies:             <ul style="list-style-type: none"> <li>• problem learning;</li> <li>• case study;</li> <li>• group work and creative groups;</li> <li>• discussions and dialogues, intellectual games, competitions, quizzes;</li> <li>• methods of reflection, projects, benchmarking;</li> <li>• presentations;</li> </ul> </li> <li>• rational and creative use of information sources:             <ul style="list-style-type: none"> <li>• multimedia tutorials;</li> <li>• electronic textbooks;</li> <li>• digital resources.</li> </ul> </li> </ul> <p>Organization of independent work of students, individual consultations.</p>
<p><b>Monitoring and assessing the achievability of learning outcomes</b></p>	<p>Current control on each topic of the discipline, control of knowledge in classroom and extracurricular activities (according to the syllabus). Assessment Forms:</p> <ul style="list-style-type: none"> <li>• survey in the classroom;</li> <li>• testing on the topics of the academic discipline;</li> <li>• test papers;</li> <li>• protection of independent creative works;</li> <li>• discussions;</li> <li>• trainings;</li> <li>• colloquia;</li> <li>• essays, etc.</li> </ul> <p><b>Frontier control</b> at least two times during one academic period within the same academic discipline.</p> <p><b>Intermediate certification</b> is carried out in accordance with the working curriculum, academic calendar.</p> <p>Conduct forms:</p> <ul style="list-style-type: none"> <li>• exam in the form of testing;</li> <li>• oral exam;</li> <li>• a written exam;</li> <li>• combined exam;</li> <li>• protection of projects;</li> <li>• • protection of practice reports.</li> </ul> <p><b>Final state certification.</b></p>

## 7. EDUCATIONAL AND RESOURCE SUPPORT OF THE EDUCATIONAL PROGRAM

<p><b>Educational Information Center</b></p>	<p>The structure of the Educational Information Center includes 6 subscriptions, 16 reading rooms, 2 electronic resource centers (ERC). The basis of the network infrastructure of the Educational and Information Center is 180 computers with Internet access, 110 workstations, 6 interactive whiteboards, 2 video doubles, 1 video conferencing system, 3 A-4 format scanners, JIC software - AIBS "IRBIS-64" under MS Windows (basic set of 6 modules), stand-alone server for uninterrupted operation in the IRBIS system.</p> <p>The library fund is reflected in the electronic catalog available to users on the site <a href="http://lib.ukgu.kz">http://lib.ukgu.kz</a> on-line 24 hours 7 days a week.</p> <p>Thematic databases of their own generation: "Almamater", "Proceedings of SKSU scientists", "Electronic archive" have been created. Online access from any device 24/7 via the external link <a href="http://articles.ukgu.kz/ru/ppp">http://articles.ukgu.kz/ru/ppp</a>.</p> <p>Catalogs are processed electronically. EC consists of 9 databases: "Books", "Articles", "Periodicals", "Proceedings of the teaching staff of SKSU", "Rare Books", "Electronic Fund", "SKGU in Print", "Readers" and "SKU".</p> <p>The EIC provides its users with 3 options for accessing its own electronic information resources: from the "Electronic Catalog" terminals in the catalog hall and in the EIC subdivisions; through the information network of the university for faculties and departments; remotely on the library website <a href="http://lib.ukgu.kz/">http://lib.ukgu.kz/</a>.</p> <p>Open access to international and republican resources: "SpringerLink", "Polpred", "Web of Science", "EBSCO", "Epigraph", to electronic versions of scientific journals in the public domain, "Zan", "RMEB", "Adebiet", Digital library "Aknurpress", "Smart-kitar", "Kitar.kz", etc.</p> <p>For people with special needs and disabilities, the library website has been adapted to the work of visually impaired users</p>
<p><b>Material and technical base</b></p>	<p>The department has the following classrooms with a total area of 274 m<sup>2</sup>: The office of the head of the department is 316 (building No. 7, Baitursynov str.). The office of the head of the laboratory is 313 (building No. 7, Baitursynov str.). Teachers' office-315,317,318,319 (building No. 7, Baitursynova str.). Computer classes-304,308,312 (building No. 7, Baitursynova str.). The department is equipped with the following equipment: computers (Core 2 Quad, Intel Core 2 Duo), printer, scanner, local system, etc. In three computer classes of the department there are 39 computers, MFPs 3 in 1 (copier, printer, scanner). In the computer room (304,308,312), computers are connected to a network system.</p>

## **APPROVAL SHEET**

on the Educational program 8D01503- " Computer science "

Director of the DAA \_\_\_\_\_ Naukenova A.S.

Director of DASc \_\_\_\_\_ Nazarbek U.B.

Director of DE&C \_\_\_\_\_ Bazhirov T.S.

## REVIEW

for the educational program  
8D01503- " Computer science ",  
developed at the M. Auezov SUK, Shymkent

### 1. Brief description of the company and the profile of its activities

RSE M. Auezov South Kazakhstan University is a leading multidisciplinary university of the Turkestan region. In the structure of the university there is a Natural Science and Pedagogical Higher School, on the basis of which the proposed EP is supposed to be implemented. Responsible for the implementation of the EP is the graduating department of "Informatics".

### 2. Relevance and relevance of EXPERIENCE

Training of specialists in the educational program 8D01503-"Computer Science". It seems very relevant in the light of the further development of the field of information and communication technologies within the framework of the Digital Kazakhstan program. Its focus on meeting the current and future needs for highly qualified information technology specialists will undoubtedly contribute to the development of the economy through the widespread use of modern achievements of scientific and technological progress in the field of modeling various processes and the use of information technology, informatization and automation of production process and business management functions.

3. The results of training and compliance, their relationship with the demands of the labor market

The learning outcomes and competencies embedded in the EP, the theoretical knowledge, practical skills and professional skills provided fully comply with the modern qualification requirements imposed on the profile specialists of the PhD doctor qualification.

### 4. Availability of components that develop practical skills

The academic disciplines of the basic and profile training provide the formation of the necessary practical skills of a specialist with fundamental knowledge in the field of mathematics, who possess computer methods of collecting, storing and processing information used in his professional activity, who are able to assess the prospects of the methods used to solve the tasks, competitive in the domestic and international labor markets.

### 5. Content of the educational program (modules, disciplines)

The proposed educational program contains all the necessary elements for the effective organization of the educational process – regulates the goals, expected results, content, conditions and technologies for the implementation of the educational process, assessment of the quality of training of a specialist with a PhD doctor qualification. It includes a curriculum, work programs of training courses, modules and disciplines,

related materials: practical training programs, academic calendar, educational and methodological complexes of disciplines.

The content of the curriculum fully corresponds to the direction of training specialists, is thought out and competently equipped with content. The academic disciplines included in the plan cover the entire range of topical issues and problems in the field of training, are fully capable of forming the necessary specialized knowledge, skills and abilities in the field of information technology.

The distribution of disciplines by academic periods is rationally and logically verified. All types of educational activities are provided for the preparation of highly qualified specialists with the skills of research work - theoretical training, industrial practice, writing and defending a doctoral dissertation. The planned volume and time resource for academic disciplines and types of training meet the qualification requirements for the level of graduates.

In accordance with the credit technology of education, the curriculum includes compulsory academic disciplines, as well as disciplines of the university component and the elective component. The disciplines of the mandatory component ensure the formation of general and professional competencies. The disciplines of the university component and the elective component expand and deepen the training of students, contribute to obtaining additional competencies, knowledge and skills necessary to ensure the competitiveness of the graduate to the requirements of the labor market.

#### 6. Quality of filling in information about disciplines

The composition of educational modules covers all relevant areas of training of specialists in the field of information technology. The content of the table "Information about disciplines" of the educational program includes the following information: the name of the module, the cycle, the type of discipline, the name of the discipline and its brief description, the number of credits, the codes of the generated learning outcomes, and also correspond to the accepted competence model of the graduate.

#### 7. Conclusion on EP

Based on the above, I consider it possible to assert that the goals and content of the presented educational program meet the modern qualification requirements for the preparation of PhD doctors specializing in the field of information technology in the educational program 8D01503-"Informatics".

Head of the Department of  
"Computer Science and Mathematics"  
Peoples' Friendship University  
named after A. Kuatbekov,  
Candidate of Technical Sciences

M.A. Amandikov

Expert opinion  
for the educational program  
8D01503-"Computer Science".

1. Relevance of the EP

The development of information and telecommunication technologies is impossible without appropriate staffing. The relevance of the EP is due to the need to prepare bachelors in computer science for the southern region and neighboring countries. This EP corresponds to the updated content of secondary education of the Republic of Kazakhstan, i.e. it is aimed at the successful training of students and is based on the expected results, which are determined by educational areas and reflect the student's ability to find and apply knowledge to solve practical problems.

2. Compliance of the EP with the formulated goals consistent with the mission of the university, the requests of employers and students

In the educational program 8D01503-"Computer Science".the concept of the educational program, the goals and objectives of training specialists, the requirements for the organization of the educational process and for applicants, the results of training in the EP, and also contains a description of the qualification characteristics of the graduate of the educational program, his key and professional competencies, information about the disciplines. The list of academic disciplines and their content content meets the modern qualification requirements for specialists in the field of information technology and informatics.

The selection of academic disciplines, the requirements laid down for the knowledge, practical skills and professional competencies being formed are fully consistent with the mission of the university "Formation of the intellectual elite of the country on the basis of generating new knowledge and transforming the university into an entrepreneurial university", meet the needs of employers and doctoral students.

3. Compliance with the National Qualifications Framework of the Republic of Kazakhstan

The objectives and content of the EP correspond to level 6 of the National Qualifications Framework of the Republic of Kazakhstan.

4. Reflection in the EP of learning outcomes and competencies based on Dublin descriptors embedded in professional standards/industry frameworks

The EP is harmonized with the Dublin Descriptors, the 1st cycle of the Qualification Framework of the European Higher Education Area (A Framework for Qualifications of the European Higher Education Area), as well as the 6th level of the

European Qualification Framework for Lifelong Learning (The European Qualifications Framework for Lifelong Learning).

5. Compliance with the classifier of training areas with higher education

The educational program corresponds to the direction 8D015-Teacher training in natural science subjects.

6. The structure and content of the EP, the application of the modular principle of their construction

In accordance with the credit technology of training, the modular principle of construction is laid down in the EP. The curriculum includes disciplines of the university component and disciplines of the elective component. The disciplines of the university component ensure the formation of general and professional competencies. The disciplines of the elective component expand and deepen the training of students, contribute to obtaining additional competencies, knowledge and skills necessary to ensure the competitiveness of the graduate to the requirements of the labor market.

The composition of the educational modules covers all relevant areas of training of highly qualified specialists in the field of information technology, competitive in the domestic and international labor markets.

7. The presence in the OP of components for training for professional activity, developing key competencies, intellectual and academic skills, reflecting the changing requirements of society, including the implementation of the presidential program for mastering three languages: Kazakh, Russian and English.

The content of the EP corresponds to the orientation of the training of specialists, is thought out and competently equipped with meaningful content. The included academic disciplines cover the entire spectrum of topical issues and problems and problems in the profile of training, are fully capable of forming the necessary specialized knowledge, skills and abilities of information technology, assume mastery of Kazakh, Russian and English languages.

8. Logical sequence of disciplines and reflection of basic requirements in curricula and training programs

The distribution of disciplines by academic periods is rationally and logically verified. All types of educational activities are provided for the preparation of highly qualified specialists with the skills of research work - theoretical training, industrial practice, writing and defending a thesis. The planned volume and time resource for academic disciplines and types of training meet the qualification requirements for the level of graduates.

The structural parts of the educational program are interrelated, continuous, aimed at achieving the planned comprehensive result and are disclosed in depth and in full.

Methodological equipment of the educational program contributes to the successful solution of tasks in key areas of training, education and development of students.

9. Reflection in the EP of the system of accounting for the academic load of students and teachers in loans, its compliance with the parameters of the credit system of education.

The content of the EP fully complies with the requirements of the credit technology of education, including in terms of accounting for the academic load of teachers and doctoral students in loans. 180 credits are provided.

10. The presence in the programs of industrial practice to consolidate the theoretical material expressed in the academic load in credits

The educational program provides for the following types of practices: pedagogical in the amount of 10 credits, research in the amount of 10 credits, research work of a doctoral student, including internship and doctoral dissertation in the amount of 123 credits.

11. Qualifications obtained as a result of mastering the EP

Upon mastering the EP, it is planned to assign the PhD Doctor of Computer Science qualification to the graduate according to the educational program 8D01503-"Computer Science".

12. Recommendations

In accordance with the above, it seems possible to assert that the goals and content of the EP meet the modern requirements of bachelor's degree training specializing in information and communication technologies.

It is recommended to accept the presented educational program for implementation.

Expert,  
Candidate of Pedagogical Sciences,  
Head of the Department of "Physics"

Tursynbaev A.Z.