

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 year

EDUCATION PROGRAMME

7M06110 – Computer science

Registration number	7M06100028
Code and classification of the field of education	7M06 Information and communication technologies
Code and classification of training areas	7M061 Information and communication technologies
Group of educational programs	Information technologies
Type of EP	Acting
ISCE level	7
NQF level	7
SQF of education level	7
Language of learning	Kazakh, Russian
Typical duration of study	2 years
Form of study	Scientific and pedagogical
The complexity of the EP, not less	120 credits
Distinctive features of EP	-
University Partner (JEP)	-
University Partner (TDEP)	-
Social Partner (DE)	-

Shymkent, 2023

Drafters:

Name	Position	Sign
Zhaydakbaeva L.K.	Associate Professor	
Kozhabayev S.E.	Senior teacher	
Akbaeva D.	teacher	
Nurmukhanbetova G.K.	Director of «KaztilDamu» LLP, The educational center	

The EP was considered in the direction of training on Innovative Teaching Technologies and Methodological Support of the Natural Science Pedagogical Higher School, at a meeting of the academic committee,

Minutes # ____ « ____ » _____ 2023 y.

Chairman of Committee _____ Bozshataeva G.T.

Considered and recommended for approval at the meeting of Educational and Methodical Council of M. Auezov SKSU.

Minutes # ____ « ____ » _____ 2023 y.

Approved by the decision of the Academic Council of the University
Minutes # ____ « ____ » _____ 2023 y.

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1 CONCEPT OF THE PROGRAM

University Mission	Generation of new competencies, training of a leader who translates research and entrepreneurial thinking and culture
University Values	<ul style="list-style-type: none"> • Openness—open to change, innovation and cooperation. • Creativity – generates ideas, develops them and turns them into values. • Academic freedom – free to choose, develop and act. • Partnership – creates trust and support in a relationship where everyone wins. • Social responsibility – ready to fulfill obligations, make decisions and be responsible for their results.
Graduate Model	<ul style="list-style-type: none"> • Deep subject knowledge, their application and continuous expansion in professional activity. • Information and digital literacy and mobility in rapidly changing conditions. • Research skills, creativity and emotional intelligence. • Entrepreneurship, independence and responsibility for their activities and well-being. • Global and national citizenship, tolerance to cultures and languages.
The uniqueness of the educational program	<ul style="list-style-type: none"> • Orientation to the regional labor market and social order through the formation of professional competencies of the graduate, adjusted to the requirements of stakeholders • Practical orientation and emphasis on the development of critical thinking and entrepreneurship, the formation of a wide range of skills that will allow to be functionally literate and competitive in any life situation and be in demand in the labor market
Academic Integrity and Ethics Policy	<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"> • Rules of academic integrity (Minutes of the Academic Council No. 3 dated 30.10.2018); • Anti-Corruption Standard (Order No. 373 n/k dated 27.12.2019). • Code of Ethics (Protocol of the Academic Council No. 8 dated 31.01.2020).
Regulatory and legal framework for the development of EP	<ol style="list-style-type: none"> 1. Law of the Republic of Kazakhstan "On Education"; 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 with amendments and additions dated December 29, 2021 No. 614 3. State obligatory standards of higher and postgraduate education, approved by order of the Ministry of Education and Science of the Republic of Kazakhstan dated July 20.2022 No. 2; 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; 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. 6. Guidelines for the use of ECTS. 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
Organization of the educational process	<ul style="list-style-type: none"> • Implementation of the principles of the Bologna Process • Student-centered learning • Availability • Inclusivity
Quality assurance of the Educational program	<ul style="list-style-type: none"> • Internal quality assurance system • Involvement of stakeholders in the development of the Educational Program and its evaluation • Systematic monitoring • Actualization of the content (updating)
Requirements for applicants	It is established according to the Model Rules for admission to training in educational organizations, implementing educational programs of higher and postgraduate education, Order of the Ministry of Education and Science of the Republic of Kazakhstan No. 600 dated 31.10.2018

2 PASSPORT of the educational program

Purpose of the EP	Preparation of competent masters of the scientific and pedagogical direction, having knowledge in information and communication technologies used in solving natural science problems.
Tasks of the EP	<ul style="list-style-type: none"> - formation of socially responsible behavior in society, understanding the importance of professional ethical standards and following these standards; - providing lifelong learning skills that will enable them to successfully adapt to changing conditions throughout their professional careers; - providing conditions for acquiring a high general intellectual level of development, mastering literate and developed speech, a culture of thinking and the skills of scientific organization of labor in the field of IT technologies; - formation of the competitiveness of graduates in the field of IT technologies, to ensure the possibility of their fastest possible employment in their specialty or continuing education at subsequent levels of education.
Harmonization of EP	<ul style="list-style-type: none"> • 7th level of the National Qualifications Framework of the Republic of Kazakhstan; • Dublin descriptors of the 7th level of qualification; • 2 cycle of a Framework for Qualification of the European Higher Education Area); • 7th Level of European Qualification Framework for Life long Learning).
Connection of the EP with the professional sphere	<p>The Sectoral qualifications Framework Education, approved by Protocol No. 2 of the meeting of the sectoral Tripartite Commission on Social Partnership and Regulation of Social and Labor Relations under the Ministry of Education and Science of the Republic of Kazakhstan dated November 23, 2016</p> <p>Professional standard "Teacher" approved by the order of the Chairman of the Board of the National Chamber of Entrepreneurs of the Republic of Kazakhstan "Atameken" No. 133 dated June 8, 2017</p>
Name of the degree awarded	After the successful completion of this EP, the graduate is awarded the degree of Master of Technical Sciences "7M06110-Informatics" of the educational program
List of qualifications and positions	Masters in OP 7M06110-Computer Science can hold the positions of a university teacher, IT specialist, software engineer, system administrator, researcher of the IT department in (research institutions, design and design organizations) without presenting requirements for work experience in accordance with qualification requirements of the 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 May 21, 2012 No. 201-ø-m and with Appendix 2 to the Sectoral Qualifications Framework "Information and Communication Technologies", approved " December 20, 2016, protocol No. 1.
Field of professional activity	The sphere of professional activity is the field of information and communication technologies in the sectors of the real sector of the economy, the field of management and business, education, dealing with the search, storage, transmission, processing and protection of information.
Objects of professional activity	The objects of professional activity of master's degree graduates are information services of research institutions; government bodies; design organizations; industrial enterprises; business structures; educational and scientific institutions; standards and profiles of computer systems; means of administration of system and network resources, security management of information resources;
Subjects of professional activity	<p>The subjects of professional activity of the Master of Technical Sciences in EP are the following systems:</p> <ul style="list-style-type: none"> - modern mathematical methods, methods of applied informatics for solving the problems of production, education and the service sector; - software for computer visualization of science and technology tasks, animation of natural processes, abstract concepts in scientific research;

Types of professional activity	<p>- Methods of teaching informatics in higher educational institutions.</p> <ul style="list-style-type: none"> - pedagogical; - research; - design and engineering; - production and technological; - organizational and managerial; - operational.
Learning outcomes	<p>LO1 Demonstrate knowledge of a foreign language in interpersonal communication, professional activity, writing scientific articles.</p> <p>LO2 Analyze the main worldview and methodological problems, incl. of an interdisciplinary nature, arising in science at the present stage of its development, to evaluate various facts and phenomena, based on the position and category of the philosophy of science.</p> <p>LO3 Evaluate the development and effective use of personnel in the organization, master social and psychological technologies for managing mass behavior.</p> <p>LO4 Develop an educational and methodological complex of disciplines, critically assess the scientific organization of the work of a teacher of higher education, analyze the nature of pedagogical phenomena</p> <p>LO5 Ability to apply knowledge, modern methods and design software for the preparation of design, working and technological documentation.</p> <p>LO6 Plan, conduct, analyze, process experimental research with the interpretation of the results obtained on the basis of modern modeling methods, computer and network technologies</p> <p>LO7 Competently solve professional problems using modern computer systems, educational and information technologies.</p> <p>LO8 Acquisition of knowledge about the functioning of various software models and the ability to systematically monitor innovation and implement innovative approaches in practice to achieve specific results</p> <p>LO9 Acquisition of professional erudition and a broad outlook in the field of mathematical, natural and socio-economic sciences and their use in professional activities</p>

3 COMPETENCES OF THE GRADUATE OF EP

SOFT SKILLS (Behavioral skills and personality qualities)	
SS 1. Competence in managing one's own literacy	SS1.1. Strive for professional and personal growth throughout life. SS 1.2. Constantly update own knowledge within the chosen trajectory and in an interdisciplinary environment, carry out further learning with a high degree of independence and self-regulation. SS 1.3. To be capable of reflection, an objective assessment of one's achievements, an awareness of the need to form new competencies and continue education in doctoral studies.
SS 2. Language competence	SS2.1. The ability of possessing a sufficient level of communication in the professional field in the state, Russian and foreign languages for negotiating and business correspondence. SS 2.2. The ability of mastering the skills of mediation and intercultural understanding.
SS 3. Mathematical Competence and Competence in the field of Science	SS3.1. The ability to interpret the methods of mathematical analysis and modeling for solving applied problems in the field of study. SS3.2. The ability to plan the setting of scientific experiments, integrate and implement the results of scientific research in the professional field. SS 3.3. The ability to analyze and comprehend modern methods of pedagogical and psychological science and apply them in pedagogical activity.
SS 4. Digital competence, technological literacy	SS 4.1. The ability to confidently use modern information and digital technologies, artificial intelligence systems for work, leisure and communications. SS 4.2. Proficiency in the use, recovery, evaluation, storage, production, presentation and exchange of information in a wide range of digital devices. SS 4.3. Ability to confidently use global information resources and apply technological literacy in research and computational and analytical activities.
SS 5. Personal, social and academic competencies	SS 5.1. Possession of the norms of business ethics, social and ethical values and focus on them in professional activities. SS 5.2. Formation of a personality capable of mobility in the modern world, critical thinking and physical self-improvement. SS 5.3. Ability to work in a team, correctly, clearly and reasonably defend one's position during discussions and make decisions of a professional nature. SS 5.4. Ability to adequately navigate in various social spheres of activity and in conditions of uncertainty. SS 5.5. Ability to find compromises, correlate own opinion with the opinion of the team.
SS 6. Entrepreneurial competence	SS 6.1. The manifestation of leadership qualities and the ability to have a positive impact on others, to lead a team. SS 6.2. The ability to create conditions for the development of creative and entrepreneurial skills of the team. SS 6.3. The ability to work in a mode of uncertainty and rapidly changing task conditions, make decisions, respond to changing working conditions, allocate resources and manage your time. SS 6.4. Ability to work with consumer needs.
SS 7. Cultural awareness and ability to express yourself	SS7.1. The ability to show worldview, civil and moral positions. SS7.2. The ability to be tolerant of the traditions and culture of the peoples of the world, to have high spiritual qualities.
HARD SKILLS	
PC1 scientific research	PC1.1 <i>PC1</i> Ability to analyze the latest achievements in the

	field of information technology, ways and means of improving computer technology, software, information systems, modern requirements of the labor market;
PC2 scientific and innovative	PC2.1 Ability to critically analyze teachers ' experience, pedagogical literature and normative documentation;
PC3 organizational and managerial	PC3.1 Ability to program using modern tools;
PC4 pedagogical and educational	PC4.1 Ability to analyze and evaluate the results of innovation in the educational process;
PC5 innovation and design	PC5.1. Ability to create, investigate, develop mathematical and program models of the computing and information processes connected with functioning of objects of professional activity;

3.1 Matrix mapping of learning outcomes at the EP in general, generated by the competence modules

	LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9
SS1	+			+	+	+	+	+	+
SS2				+	+	+	+	+	
SS3			+		+	+	+	+	+
SS4	+	+				+	+	+	+
SS5		+		+	+	+		+	
SS6			+					+	
SS7	+						+		
PC1	+			+	+	+	+	+	+
PC2				+	+	+	+	+	+
PC3				+		+	+	+	+
PC4				+	+	+	+	+	+
PC5	+			+	+	+	+	+	+

)	<p>content coverage. Content: Preparation of written messages on scientific topics on the educational program: a scientific report, theses on the topic of scientific research, summarization of original sources in a foreign language, annotation of the scientific text, summary. Understanding the overall content of authentic records. Perception by ear of lectures, messages containing professional information. Development of oral communication skills in the educational program: presentation of a scientific report, presentation of scientific research, scientific discussion, scientific debate, use of situational games.</p>										
	BD	UC	Psychology of Management	<p>Purpose: Formation of system knowledge, skills and skills of effective personnel management Contents: Introduction to management psychology. Psychological factors of managerial efficiency. Personality in the management system. Motivation and effectiveness of organization. Leadership in organization. Stress in organization and emotional burnout. Psychology of conflict management. The personality of subordinate. Psychological characteristics of the head personality. Psychological influence in management activities. Psychological foundations of managerial decision-making. Interpersonal communication in management</p>	4		✓							

				<p>educational institutions, mastering the pedagogical skills of conducting certain types of training sessions in the disciplines of the profile corresponding to the direction of study.</p> <p>Content: Scientific-pedagogical thinking culture. Participation in lectures of leading teachers. Preparation and conducting of practical and laboratory classes on special subjects. Development of new active forms of teaching with students and use in practical lessons.</p>										
Theoretical Foundations of Informatics and Scientific Research	BD	EC	Web design	<p>Purpose: Aimed at the development of professional web-programming skills in the development of Internet resources.</p> <p>Contents: Professional development of a web-resource; site layout; HTML hyper-markup techniques, CSS style sheets; - designing a web-resource and MS SQL database model; - Fundamentals of JavaScript programming for the development of Internet programs; - PHP programming elements for websites; - GIT team development techniques.</p>	5					✓		✓		
	BD	EC	Theory of viability in managed systems	<p>Purpose: To introduce the ideas, tasks and cognitive systems of the theory of controlled systems, the theory of viability in controlled systems.</p> <p>Content: Evaluation of features, recognition of concrete and abstract images, methods of solving problems of cognitive theory, analysis and evaluation of differences between statistical and logical methods of viability theory in</p>						✓		✓		

				controlled systems.										
	PD	EC	Recognition theory	<p>Purpose: the ideas, tasks and cognitive systems of cognitive theory, cognitive theory.</p> <p>Content: Recognition of features, concrete and abstract images, formulation of problems of the theory of knowledge, evaluation of methods of solving problems of the theory of knowledge, analysis and assessment of differences between statistical and logical methods of the theory of knowledge..</p>	5				✓					
	PD	EC	Expert System	<p>Purpose: Formation of students' knowledge about Expert Systems, how they use the principles of artificial intelligence and formalized knowledge of an expert to process operational information and make informed decisions in the analyzed subject area.</p> <p>Content: Expert systems have an intelligent database, basic concepts, techniques and methods of work in knowledge representation languages and tools for the development of intelligent systems, in methods of extracting knowledge</p>									✓	✓
	PD	EC	Planning and Organization of Scientific Research	<p>Purpose: The study of the discipline is to prepare undergraduates for independent planning, organization and implementation of scientific and applied research.</p> <p>Contents: Selection of scientific topics, basic research methods, principles of standardization in research work,</p>	4					✓				✓

				registration of research results, development of skills in working on scientific publications and articles, content of master's theses and requirements for them, methods of literary search.										
	PD	EC	Methods of the Experiment	Purpose: The methods of conducting the experiment include a thorough theoretical analysis. Contents: Identification of unresolved problems, selection of the topic of this study, setting the goal and objectives of the study, studying real practice in solving this problem; the study of measures existing in theory and practice that contribute to solving the problem; formulation of the research hypothesis. Experimental proof, taking into account innovation, unusualness, contradiction to existing opinions.				✓		✓				
	RP		Research Practice	Purpose: Practical study of the latest theoretical, methodological and technological achievements of domestic and foreign science. Contents: Modern methodology of scientific research; analysis, processing of experimental studies with the interpretation of the results obtained on the basis of modern modeling methods, computer and network technologies. Conduct theoretical and experimental research on the topic of the dissertation.	6									
Technology of realization of	PD	EC	Technology of Software Development	Purpose:: To evaluate and compare technologies, methodologies and standards that support software	5					✓		✓		

programmatically facilities			t	development processes. Content: architecture, life cycle, management, testing methods, models, metrics and processes of object-oriented software systems, learning knowledge and skills in the field of design, testing, debugging, implementation and maintenance of computer software using modern CALS technologies and CASE										
	PD	EC	Algorithm and their Complexity	<p>Purpose: "Algorithms and their complexity" aims to familiarize undergraduates with fundamental data processing algorithms, as well as with modern methods for studying algorithms and assessing their algorithmic complexity.</p> <p>Content: Theoretical knowledge about the main problems of the theory of algorithms, the model of calculations and approaches to evaluating the effectiveness of algorithms; - the skill of practical use of classical algorithms, their modification for specific tasks, the development and implementation of new algorithms - to apply the acquired knowledge in their professional activities</p>						✓	✓			
	BD	EC	Creation of a Package of Applied Programs	<p>Purpose: In programming environments, packages of applied programs are created that are solved by numerical methods using a computer. Contents: Creation of a package of applied programs; formation of an idea about the methods for checking the correctness and accuracy of the obtained numerical solutions; the ability to learn, acquire</p>	4						✓		✓	✓

				new knowledge, skills in the field of mathematical sciences and use them in professional activities										
	BD	EC	Application Software	<p>Purpose: formation of undergraduates' basic competencies in the field of application software use, which are further developed in the formation of professional competencies of a specialist in applied informatics.</p> <p>Content: Skills in working with tools for modeling the subject area, applied and information processes; development of technological documentation; working with database and knowledge design tools</p>							✓		✓	✓
	BD	EC	High-performance Systems and Technologies	<p>Purpose: Within the framework of the course "High-Performance Computing Systems and Technologies" it is proposed to study the hardware and software parts of multiprocessor and multimachine computing systems, their classification. The study of general approaches to the construction of parallel algorithms and software systems.</p> <p>Content: To orientate in the hardware and software of parallel systems; know the basic concepts of designing software systems designed to work on various types of multiprocessor computing systems.</p>	6						✓	✓		
	BD	EC	High Performance Computing	<p>Purpose: study of the main architectures of multiprocessor systems and the principles of developing application software for them.</p> <p>Content: Knowledge of the architecture</p>							✓			✓

				of modern mathematical and graphical coprocessors; The ability to independently understand and study the architecture of newly emerging accelerators; Knowledge of software development principles for modern GPUs; Navigate the CUDA technology stack for nVidia GPUs; Know the composition of the CUDA library for non-graphical computing, be able to use these libraries when developing software for the nVidia GPU										
New methods and way of teaching Informatics	PD	EC	Applied cryptography	Purpose: Evaluate and characterize mathematical models and cryptographic properties of cryptosystems with symmetric algorithms. Content: symmetric encryption standards; cryptosystem requirements; symmetric cryptography algorithms programming; master the properties of programming technologies used to create cryptosystems; master the technology of creating cryptosystems in an object-oriented programming environment.	6						✓	✓		
	PD	EC	Problems of Theory and Practice of Teaching Informatics	Purpose: Informatization of education, the main problems of education and possible solutions. Contents: Basic concepts of informatization of education; identification of the main problems of training; finding optimal solutions to various learning problems.							✓	✓		
	PD	EC	Network technologies	Purpose: Preparation of undergraduates for professional problem solving to achieve the quality and efficiency of design and implementation of network	6						✓	✓		

				<p>and communication technologies for programming and building computer networks based on existing standards and technologies.</p> <p>Contents: Ethernet/ FastEthernet/ GigabitEthernet, ATM, FrameRelay, TCP/IP, IPX, development of networks using these technologies and understanding of other technologies that exist in the field of computing systems, the ability to navigate security issues, existing tools for ensuring system security.</p>										
	PD	EC	Sensor Network	<p>Purpose: "Sensor networks" is to study the basic principles of building wireless sensor networks (WSN), familiarization with domestic and foreign experience in the use of WSN and mastering the basics of modeling the work of WSN in specialized emulators.</p> <p>Content: Obtaining knowledge in the field of theoretical foundations of work, as well as the principles of construction and specifics of the use of wireless sensor networks; the formation of skills and abilities to apply the acquired knowledge in the process of developing the WSN structure and software for network nodes, as well as in modeling the work of the WSN.</p>							✓	✓		
Pedagogical bases of computer science	PD	EC	Technology Block Chain	<p>Purpose: Models and mechanisms of blockchain technology, fundamental concepts in the cryptocurrency economy.</p> <p>Contents: The concept of mining and analysis of blockchain technology and</p>	6				✓		✓			

				cryptocurrency mining. Bitcoin transactions and their verification. The latest cryptographic technologies used in blockchain technology. Ways to protect user accounts and ensure transaction security, as well as transaction accounting.										
	PD	EC	Information Technologies in Education	Purpose: "Information technologies in education" - to acquaint undergraduates with methods of representation and mathematical processing of information. Content: the study of mathematical methods of information processing in relation to educational, research and practical activities and the basics of the process of mathematical modeling in professional activities, the formation of criteria in accordance with the goals and rational search for information; analyze professional tasks of your profile, find and apply effective methods for solving them					✓	✓		✓		
	PD	EC	Scientific and Pedagogical Foundations of Computer Modeling	Purpose: To evaluate and characterize the basic concepts, principles and properties of information-computer modeling. Contents: Methods and technologies of modeling in scientific research and design, development and improvement of mathematical models and methods used in various fields of science and technology, application of methods, tools and technologies of information-computer modeling	5					✓	✓			
	PD	EC	Methodical Bases of Use	Purpose: The solution of typical professional methodological tasks of a						✓		✓		

5 A SUMMARY TABLE SHOWING THE VOLUME OF CREDITS IN THE CONTEXT OF THE MODULES OF THE EDUCATIONAL PROGRAMME

Trainingcourse	Semester	Number of modules to be mastered	Number of subjects studied			Number of subjects studied					Total hours	Total credits KZ	Number	
			GC	VC	EC	Theoretical training	Pedagogical practice	Research. practice	Research work of a master's degree student	Final certification			exam	differentiated credit
1	1	5		5	2	29		-	1	-	900	30	6	2
	2	5		1	4	23	4		3	-	900	30	4	2
2	3	4			3	21		7	2	-	900	30	3	2
	4	1			0	0		-	18	12	900	30		1
total				6	9	73	4	7	24	12	3600	120	13	7

6 LEARNING STRATEGIES AND METHODS, MONITORING AND EVALUATION

Learning strategies	<p>Studentcentred Approach in Education: learner – teaching center / learning and an active participant in the learning and decision-making process.</p> <p>Practice-oriented training: orientation to the development of practical skills.</p>
Teaching methods	<p>Conducting lectures, seminars, various types of practices:</p> <ul style="list-style-type: none"> • using innovative technologies: <ul style="list-style-type: none"> problem-based learning; case study; work in a group and creative groups; discussions and dialogues, intellectual games; reflection methods, Bloom's taxonomies; presentations; • rational and creative use of information sources: <ul style="list-style-type: none"> multimedia training programs; electronic textbooks; digital resources. <p>Organization of independent work of undergraduates, individual consultations.</p>
Monitoring and evaluation of the achievability of learning outcomes	<p>Current control on each topic of the discipline, control of knowledge in classroom and extracurricular classes (according to syllabus). Assessment forms:</p> <ul style="list-style-type: none"> • survey in the classroom; • testing on the topics of the discipline; • control works; • protection of independent work; • discussions; • trainings; • colloquiums; • abstract, etc . <p>Boundary control at least twice during one academic period within the framework of one academic discipline.</p> <p>Intermediate certification is carried out in accordance with the working curriculum, academic calendar.</p> <p>Forms of conducting:</p> <ul style="list-style-type: none"> • exam in the form of testing;

	<ul style="list-style-type: none"> • oral examination; • written exam; • combined exam; • project protection; • protection of practice reports. <p>Final state certification.</p>
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EDUCATIONAL AND RESOURCE SUPPORT OF THE EP

Educational Information Center	<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 http://lib.ukgu.kz 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 http://articles.ukgu.kz/ru/ppp.</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 http://lib.ukgu.kz/.</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>
Material and technical base	<p>The material and technical base of the Department of Informatics includes the following classrooms and computer classes for students in the magistracy:</p> <ul style="list-style-type: none"> - there are 3 computer classes for laboratory work, one of them with an interactive whiteboard; - lecture halls; - STEM center. <p><i>Bases of practice for undergraduates</i></p> <ol style="list-style-type: none"> 1. SMCE "Higher College of New Technologies" named after Manap Utebayev" 2 Water Resources-Marketing LLP 3. KazTilDamu LLP 4. South Kazakhstan College of Humanities and Economics 5. M. Auezov SKU, laboratory "Mechatronics and Robotics"

AGREEMENT SHEET

by Education Program «7M06110 – Computer science»

Director of AID _____ A.S.Naukenova
Sign

Head of ASD _____ U.B.Nazarbek
Sign

Head of DEK _____ T.S.Bazhirov
Sign