ATYRAU UNIVERSITY

THE MINISTRY OF EDUCATION AND SCIENCE OF KAZAKHSTAN
KH.DOSMUKHAMEDOV ATYRAU STATE UNIVERSITY

APPROVED

Chairman of the Scientific Council

a.e. rector, professor _____ A.A.Taltenov

_____ 2016 y.

EDUCATION PROGRAM

Specialty 6M011100-Computer science

Specialty: 6M011100-Computer science

Education level: Magistracy

Atyrau, 2016

The educational program is considered and recommended for approval at the meetings:
Educational-Methodical Council of the University
Protocol№ 2 " 21 " 10 20 16

Chair of the educational-methodical council of the university _____ Dzharasova G.S

Educational-Methodical Council of Physics, Mathematics and Information Technologies
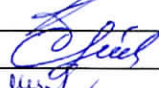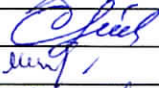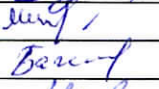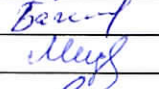Protocol№ 1 " 15 " 09 20 16

Chairof the educational-methodical council of the faculty _____ Kenzhegulov B.Z

Approved at the meeting of the department _____
Protocol№ 1 " 31 " 08 20 16
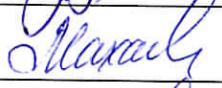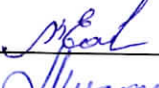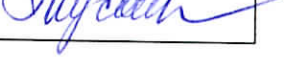
Head of Department _____ Mailybaeva A.D

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FullName	Position	Signature
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Koyshigulova L.E	Dean of the Faculty of Education Innovation, professor	
Musaeva A.A	Dean of the Faculty of Natural and Agricultural Sciences	

1. Field of application

It is intended for training of masters on the educational program in "6M011100-Computer science" at the Kh.DosmukhamedovAtyrau State University.

2. Normative references

Law "On Education" of the Republic of Kazakhstan dated July 27, 2007 No. 319- III (with amendments and addendums as of 02/13/2012).

Model regulations on the activities of institutions of higher and postgraduate education", approved by Order of Government of 17.05.2013 №499

The State Obligatory Standard of Higher and Postgraduate Education (Approved by the Resolution No.1080 of the Government of the Republic of Kazakhstan, dated August 23, 2012).

"Rules of the educational process for the loan program" that was approved by Order of MES RK of 20.04.2011 № 152,

"Model rules of monitoring of progress, interim and final assessment of students in higher educational institutions", approved by Order MES RK of 18.03.2008 № 125;

Memorandum ofUniversities of the Republic of Kazakhstan.
Taraz Declaration. (Taraz city, 22 may 2007 y.);

Rules of organization and conduct of professional practice and rules for determining the organization as a database of practices approved by order of MES RK by January 29, 2016 № 107;

Orders sectoral ministries approving the sectoral framework in the field ofComputer science.

3. The concept of the educational program

This educational program, developed on the basis of the State educational standards, is designed as the main regulatory document defining the specific content of the training of masters in «6M011100-Computer science» Kh.Dosmukhamedov Atyrau State University.

It reflects the particular objectives of the educational training of masters who have innovative thinking, owning advanced technology in the field of teaching of computer science and the use of new information technologies in the future professional - pedagogical activity, namely, the work of a wide class of application software, repair and maintenance of computer equipment, installation system and application software, as well as the design and creation of software, databases, Internet sites.

The educational program is aimed at forming a new approach to teacher training in the field of computer-based multi-level training of modern teacher, a competitive labor market, competent, responsible, fluent in their profession and based in adjacent areas, capable of effective vocational and educational work in the specialty at the level of world standards, ready for continuous professional development, social and professional mobility.

The uniqueness of the educational program "6M011100-Information science" is determined by the competences possessed by the master, the past education under this program. By the unique competencies include: knowledge of the methodological framework and categories of pedagogy; psychological capabilities and needs of the students, theory and methodology of teaching computer science, programming languages, software packages; ability to plan organize my self; self-study; use information and communication technologies in teaching activities at the level of a skilled user to own a computer, programmed with the use of modern tools to teach their knowledge to students, to carry out educational work; programming using the latest tools to teach their knowledge to students; Ownership applications programming, analysis of their operation efficiency, conduct classes in schools, technical and vocational schools; critical and creative thinking; understanding, the formulation and solve educational

problems; transmission of common cultural values, norms and traditions; personification of themselves as individuals.

This educational program has been developed taking into account the generalization of modern domestic and international experience of training in this area, copyright and collective scientific achievements and educational developments in the field of specialization, the requirements of employers and the labor market needs.

4. The objectives of the educational program

GOAL 1. Preparation of competitive specialists for the education system of Kazakhstan, having basic knowledge for scientific, educational activities in the field of computer science teaching, taking into account the demands of society and regional requirements

GOAL 2. Preparing graduates to perform organizational and management activities to ensure the effective functioning of the educational institutions and schools of different types implementing various programs of studying computer science based on the optimization of the educational process at the expense of modern educational technologies.

GOAL 3. Creation of conditions for mastering general and specific competencies, as well as innovative approaches and research skills in the field of informatics and computer science teaching, contributing to social mobility, and a graduate of stability in the labor market.

GOAL 4. Formation of social and personal qualities of the graduates: dedication, discipline, hard work, communication skills, teamwork, responsibility for the final result of their professional activities, civic responsibility, tolerance; the ability to self-improvement and self-development, pro-active attitude.

GOAL 5. Preparing graduates for the implementation of professional activity in the sphere of application of information - communication and network technologies, modern programming technologies, as well as in the development, implementation and maintenance of application software of the computer.

5. Passport of the educational program

5.1 Key competencies that graduates need to master the educational program:

- **in native language**
free use of the ability of oral and written communication on the basis of the use of morphology, grammar and style of the state language (GC-1) ;
- **inforeign languages**
the ability to carry out communication in a foreign language, taking into account cultural differences and stereotypes of thinking (GC-2) ;
- **fundamental mathematical, natural - scientific and technical training**
theability to apply mathematical methods and simulation, knowledge and philosophical foundations of life, understand the importance of environmental issues and environmental protection (GC-3) ;
- **computer skills**
the ability to own the equipment and maintenance of computer technology to collect, store and process information used for professional activities(GC-4) ;
- **learning**
to develop comprehensive plans for qualifying work for the implementation of educational programs and curricula for the teaching of computer science in secondary plans and specialized secondary educational institutions, including participation in the design, development and implementation of standard measures(GC-5) ;

- **social (interpersonal, intercultural, civic) training** - the ability to application of the ethical, legal norms regulating interpersonal relationships between the particular subject and society, man and the environment (GC-6);

- **entrepreneurship, economic training** - the ability to solve social issues, based on a deep knowledge of the rules of social life, the demographic and economic situation in the respective regions (GC-7);

- **cultural training** - the ability to apply general human behavior and professional ethics; a high level of internal culture, moral principles and ethical behavior; availability of ecological culture, the desire to preserve the environment, as well as additional skills - critical thinking, creativity (creativity), an innovative dimension, active life (GC-8).

Additional competencies:

It owns a system of subject, psychologist - pedagogical and methodological knowledge, abilities and skills of application of theoretical knowledge in professional activity, taking into account the specific socio-pedagogical conditions; aware of the professional duty of the teacher, the responsibility for the results of pedagogical activity (GC-9);

Fluent knowledge of modern pedagogical anthropology, skills and abilities to study, compile, distribute, and use the experience of highly qualified teachers; has a high motivation to teaching, strive for self-education and self-knowledge (GC-10);

Fluent knowledge of the psychology of creativity, the theoretical foundations of creativity, abilities and skills to rebuild professional activities, to implement the author's innovative ideas in education, and to find creative alternative solutions, being able to generate new pedagogical ideas, critical thinking (GC-11);

Fluent knowledge of the pedagogical integration of theory, skills and abilities to integrate knowledge from different subject areas in the solution of pedagogical problems, to be able to social partnership and educational cooperation (GC-12).

5.2 Professional competence

Able to apply in professional activity bases of computer science and and take into account age-related anatomical and physiological, social and psychological features of students, to apply in practice the methodology of philosophical comprehension of the world and education as an integrated system in a professional activity (PC-1)

Able to use the knowledge in the field of computer science in research, to apply modern information and communication technologies in their teaching activities: design, develop and implement the newest computer technology (PC-2)

Able to list modern models, methods and technologies of database design, have methods of database management and information systems, build techniques the development of database management systems, database programming (PC-3)

Able to use given encoding algorithm in the development of effective methods and search technology which is unique in its effectiveness and capabilities of the algorithm for solving Olympiad problems (PC-4)

Able to develop, to accompany and implement programs, websites, computer tutorials, animations, interactive projects and use them in their professional activities. (PC-5)

Able to use a foreign language to communicate knowledge and understanding of professional texts, translated from a foreign language into Kazakh (Russian). (PC-6)

Able to use various techniques of effective develop and reliable algorithms in designing the software; modeling, analysis and use of mathematical methods of design and logical - mathematical methods for the analysis and testing of software (PC-7)

Able to program with using modern programming languages and to give knowledge to students (PC-8)

Able to classify, to summarize material with using various types of analysis, organize extra-curricular activities in computer science for the develop of interest in the subject among

students of different age groups, to select and use the best forms and methods of extracurricular activities on the computer science and on the whole upbringing work (PC-9)

Able to carry out educational- upbringing activities, design and management of the educational process of students, to perform motivational, diagnostic correctional, communicative and methodological work under the conditions of use of modern pedagogical and information-communication technologies (ICT): to search for, analyze and select information, save and send it (PC-10)

Able to possess modern methods and technologies of training to computer science, for realization of basic education programs, elective courses and processes of socialization, professional self-determination of students, select and use the optimal forms and methods of extracurricular activities on the computer science and on the whole educational-upbringing work (PC-11)

Able to self-development of pedagogical skills and creative attitude to teaching - educational activity, the establishment of cooperation with teachers, students, parents, to research approaches to educational activities (PC-12)

Able to implement the system software of computers, to carry out installation and configuration of network hardware in modern operating systems, to ensure the security of information systems, integrate knowledge and competence in the broader context, to carry out the installation and configuration of network hardware in modern operating systems; provide assignment access rights, password protection and copying of the file system content, to share hardware and software resources of a network for sharing (PC-13)

Able to use modern software and operating systems, to carry out selection of effective capabilities of OS, install and configure the operating system and its functions, programming in scripting languages, create packet operating system configuration tasks, analyze the effectiveness of the operating system, to evaluate the software and prospects in view of solving professional problems, design various Internet applications, to determine the specificity and techniques for implementing web applications, create websites, design databases (PC-14)

Able to set the task of system design and complexation of local and global networks cf service users of information systems (PC-15)

5.3 The sphere of professional activity

Professional activities of Bachelor of Education on specialty 6M011100 - Computer Science:
- Laboratory assistant in the preschool and school institutions;
- Trainers in computer training centers, operators of software in organizations;
- Laboratory assistant in middle and secondary - professional organizations of education;
- The specialists in the development and implementation of databases and information systems;
- The staff of research institutes, centers in the area of computer science, pedagogy, psychology and methodology of teaching of computer science;;
- Specialists in the management of public organizations, departments of education and other institutions;
- Teachers of computer science in secondary schools and secondary - professional organization of education.

6. The learning outcomes

Results of study on specialty 6M011100-Computer Science Education Master (6th qualification level of the Republic of Kazakhstan) in accordance with the Dublin descriptors of the first level of training involves the ability:
1) demonstrate knowledge and understanding in the field of computer science, including elements of the most advanced knowledge in the field of information technology;

2) to apply this knowledge and understanding in a professional manner: research activities, teaching in secondary and vocational schools, organizations and the implementation of extra-curricular forms of work with students, the implementation of educational activities in the field of informatics;

3) formulate arguments and solve problems in the field of study using basic provisions of informatics in research, using modern information and communication technologies in their teaching activities; the collection, interpretation of data and preparation of scientific materials, processing of research results to make judgments taking into account social, ethical and scientific reasons, to communicate information, ideas, problems and solutions to both specialists and non-specialists.

4) build effective communication; build interpersonal communication, observe the rules of speech in public statements; understands the nature of the relationship and political phenomena, the mechanism of functioning of power, the nature and essence of world politics;

5) have the skills acquisition of new knowledge necessary for daily professional activity (internship, writing a thesis), to develop an algorithm for solving a specific problem, debug the program and use a variety of programming languages (Delphi, C ++, etc.).; be able to analyze the sources and types of security threats, own methods of assessing the damage caused by violations of data protection.

7. Содержание образовательной программы/ Білім бағдарламасының мазмұны/ The content of the educational program

Модульдің атауы/ Наименова-ние модуля/ Module name	Пән коды/ Код дисцип-лины/ Code of discip-line	Пәннің аталуы/ Наименование дисциплины/ Name of the discipline	Циклі және компо-ненті/ Циклик омпо-нент/ Cycle and compo-nent	Бакылау түрі/ Форма контроля/ Form of control	Семестр (A,B,C тобы) Семестр (группа A,B,C) Term (group A,B,C)	Кредит саны/Объем кредитов/The volume of loans		Қалыптасаты н құзыреттілікт ер/ Формируемы екомпетенци и //Formed competence
						KZ	ECTS	
Жалпы модульдер / Общие модули / Common modules								
РКВМ 501 Психологиялық коммуникативтік баскару модулі/ (5 кредит)/ Модуль психолого-коммуникативного управления (5 кредита)/ Communicative psychological management module (5 credits)	ShT/IYa (P) 5201	Шетел тілі (кәсіби) / Иностранный язык (профессиональный) / Foreign language	БП, МК БД, ОК BD, CC	Ауызша емтихан / Устный экзамен / Oral exam	1 (A)	2	3	ОК-2, ОК-8, ПК-6 GC-2, GC -8, РС-6
	MPB / MUP 5202	Менеджмент / Менеджмент / Management	БП, МК БД, ОК BD, CC	Презентация / Презентация / Presentation	1 (A)	1	2	ОК-8 GC-8
	ТКР / PUL 5203	Психология / Психология / Psychology	БП, МК БД, ОК BD, CC	Эссе/Эссе/ Essay	1 (A)	2	3	ОК-9,ОК-8, ОК-11 GC -9, GC -8, GC -11
Модули по специальности/Мамандық бойынша модуль/Thespecialtymodules								
MIMM 502 «Мектеп	IOK/ OKI 5204	Информатикадан олимпиадалар мен конкурстар / Олимпиады и конкурсы по информатике / Olympiads and competitions in	БП, ТК БД, КВ BD, CS	Жазбаша емтихан / Письменный экзамен /	1(C)	3	5	ОК-3, ОК-4 ПК-1, ПК-9 GC-3, GC-4

Модуль / Module	Код / Code	Пән атауы / Дисциплина / Discipline	Цикл / Cycle	Бақылау түрі / Форма контроля	Семестр	Кредит	ECTS	Құзыреттер / Компетенции
информатикасындағы мейнстрим» модулі (8 кредит) / Модуль «Мейнстрим в школьной информатике (8 credits)	ITTOA MOIGI/ 5204	informatics Информатиканы таңдаулы тараларын оқытудың әдістемесі / Методика обучения избранным главам информатики/Methods of teaching selected chapters of computer science		Written examination				РС-1, РС-9
	ZhB/PP 5302	Жобалық бағдарламалау / Проектное программирование/Project programming	КП/ТК ПД/КВ PD/CS	Жоба Проект Project	1(C)	3	5	ОК-4, ОК-8 ПК-2 GC-4, GC-8 РС-2
	PMS / MOB 5302	Мультимедиа ортасындағы бағдарламалау / Программирование в мультимедийных средах /Programming in multimedia environments						
	P(O)/P(P) 5401	Практика (өндірістік) / Практика(производственная)/Practic e production	ОКТ/ ДВО/ АТЕ	Сынақ/ Зачет/ Offset	2(C)	2	5	ОК-5, ОК-8, ОК-9, ОК-10, ОК-11, ОК-12 ПК-9 GC-5, GC -8, GC -9, GC -10, GC -11, GC -12 РС-9
SBM 503 «Сандық білім» модулі (15 кредит) / модуль «Цифровое образование» (15 кредитов) /	SRAOE / EOChCtR 5303	Сандық ресурстар арқылы оқытудың экожүйесі / Экосистема обучения через цифровые ресурсы / Learning ecosystem through digital resouces	КП/ТК ПД/КВ PD/CS	Ауызша емтихан / Устный экзамен / Oral exam	1(C)	3	5	ОК-3 ПК-1, ПК-4 ОК-5, ОК-8 ПК-1
	TOFIOS/ ABOKTN	Ақпараттық білім ортасын қалыптастырудың теориялық						GC-3 РС-1, РС-4

Module	Code	Name	Цикл, компонент / PD, CC	Бақылау түрі / Форма контроля / Form of control				Құзыреттер / Компетенции / Competencies
Module digital education (15 credits)	5303	негіздері / Теоретические основы формирования информационной образовательной среды / theoretical bases of formation of information educanional environment						GC-5, GC-8 PC-1
	OUSBR / CtORUP 5304	Оку урдісіндегі сандық білім ресурстары / цифровые образовательные ресурсы в учебном процессе / digital educational resources in the educational process	КП/ТК ПД/КВ PD/CS	Емтихан / Экзамен / Exam	1(C)	3	5	OK-5, OK-8 ПК-10, ПК-4, ПК-11
	KTOUK /ABOKTN 5304	Компьютер техникасын оку үдерісінде пайдалану /применение компьютерной техники в учебном процесс / the application of computer technology in the educational process						GC-5, GC-8 PC-10, PC-4, PC-11
	KJIMT/KSI MT 5301	Компьютерлік желілер, интернет және мультимедиялық технологиялар/Компьютерные сети, интернет и мультимедиа технология/ Computer networks, internet and multimedia technologies	КП, МК ПД, ОК PD, CC	Жазбаша емтихан /Письменный экзамен / Written examination	1(A)	1	2	OK-1, OK-2, OK-3, OK-4, ПК-1, ПК-2, ПК-5, ПК-10, ПК-14 GC -1, GC-2, GC-3, GC-4, PC-1, PC-2, PC-5, PC-10, PC-14
	MEZZh/ EIRM 5402	Магистрлік жобаны орындауды коса есептегендегі магистранттын эксперименттік-зерттеу жұмысы (МЭЗЖ) / Экспериментально-исследовательская работа магистранта, включая выполнение	ОКТ/ ДВО/ АТЕ	Сынак/ Зачет/ Offset	2	4	8	OK-3, OK-4, OK-5, OK-6, OK-7, OK-8 ПК-9

Code	Discipline		FA				Competencies
	магистерского проекта (ЭИРМ) Experimentally-research work of ministrant, including implementation of master's project.						GC-3,GC-4, GC-5, GC-6, GC-7, GC-8 PC-9
КЕ/КЕ 5403	Кешенді емтихан / Комплексный экзамен / Comprehensive exam	Мемлекеттік емтихан Государственн ый экзамен State examination	КА/ИА/ FA	2	1	4	ОК-12, ПК-6 GC-12,PC-6
MDRK 5404	Магистрлік жобаны жазу және қорғау / Оформление и защита магистерского проекта / Drafting and defense of master's project	Қорғау Защита Protection	КА/ИА/ FA	2	3	12	ОК-10, ПК-2 GC-10, PC-2

Notes:

group A – obligatory disciplines which are studied in strictly set sequence;
groupB –obligatory disciplines which are studied in any sequence;
groupC –the disciplines for choice studied in any academic period.

The matrix of competence

The moduls	Global competence																		Professional competence								
	GC-1	GC-2	GC-3	GC-4	GC-5	GC-6	GC-7	GC-8	GC-9	GC-10	GC-11	GC-12	GCC-1	GCC-2	GCC-3	GCC-4	GCC-5	GCC-6	PC-7	PC-8	PC-9	PC-10	PC-11	PC-12	PC-13	PC-14	PC-15
РКВМ 501 Психологиялық коммуникативтік басқару модулі/ (5 кредит)/ Модуль психолого-коммуникативного управления (5 кредита)/ Communicative psychological management module (5 credits)		+				+	+	+	+		+							+									
МІММ 502 «Мектеп информатикасындағы мейнстрим» модулі (8 кредит) / Модуль «Мейнстрим в школьной информатике» (8 кредитов) / Module is mainstream in school informatics (8 credits)				+	+	+	+	+	+	+	+	+	+	+	+		+	+	+	+	+	+	+	+	+		+
SBM 503 «Сандық білім» модулі (15 кредит) / модуль «Цифровое образование» (15 кредитов) / Module digital education (15 credits)			+	+	+	+	+			+		+		+					+		+						

9. Summary table, reflecting the volume of the mastered credits in the cut of educational program units

The course of training	Semester	Amount of the mastered modules	Amount of the studied disciplines		Amount of credits of KZ						Only in the o'clock	ECTS	Amount	
			OC	CC	Theoretical educating	Pedagogical practice	Productive practice	ERWM	Final attestation	Total			differential test	exam
1	1	3	4	4	18					18	810	30		8
	2	1	-	-			2	4	4	10	1050	29	2	2
Total			4	4	18		2	4	4	28	1860	59	2	10