

**MINISTRY OF LABOUR AND SOCIAL PROTECTION OF THE
POPULATION OF THE REPUBLIC OF KAZAKHSTAN**

**“DEVELOPMENT OF LABOR SKILLS AND STIMULATION OF
WORKPLACES” PROJECT**

EDUCATIONAL PROGRAM

1304000 - “Computers and Software”

(code and name of the specialty)

Level of professional training: mid-level specialist

Duration of training: 3 years 10 months.

Astana, 2018

The educational program was reviewed and recommended by the Republican Educational and Methodological Council of the Ministry of Education and Science of the Republic of Kazakhstan

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INTRODUCTION

The present educational program is prepared in accordance with the current Legislation of the Republic of Kazakhstan “On Education”, normative documents, resolutions of the Government of the Republic of Kazakhstan in the field of education that determine the training content in specialty 1304000 “Computer Science and Software”:

- State obligatory standard of technical and vocational education, approved by the Decree of the Government of the Republic of Kazakhstan dated August 23, 2012 No. 1080 (as amended as of August 15, 2017);
- National qualifications framework, approved by the protocol dated March 16, 2016;
- Sectorial qualifications framework, approved by the minutes No. 1 of the meeting of the sectorial commission on social partnership and regulation of social and labor relations in the field of information and communication technologies dated December 20, 2016;
- Draft professional standard “Software Support Specialist”, presented by the system researches company “FACTOR” as in force on April 24, 2018;

The program is designed to implement the principles of the democratic nature of education management, expand the boundaries of academic freedom and the authority of educational institutions, which will ensure the adaptation of the technical and vocational education system to the changing needs of society, the labor market economy. The program flexibility will allow to take into account the abilities and needs of the individual, production and society.

The modular-competence approach is based on the development of training and assessment of the competencies of students in educational institutions in the form of basic educational results, the possibility of a differentiated approach use to teaching.

The program ensures the application of an individual approach to the students, greater freedom in the choice of teaching methods by the teachers, the forms of organization and content of the educational process, the acquisition by the students in the same educational institution of different levels - from the basics of the profession to the level of a highly skilled worker, a middle level specialist, an applied bachelor.

Practice has shown that future specialists of middle level must necessarily pass all levels of training in TVE, namely - increased level of a specialist’s qualification of middle level, i.e. only after actually mastering of two or three competencies a worker can become a highly competent technician.

Based on this EP, the education organization develops working curricula and programs with the use of appropriate methodological recommendations for working training and planning documentation.

The education program purpose: the preparation of qualified middle-level specialists for the works performance on the technical support of

information systems in various sectors of the economy of the Republic of Kazakhstan

The education program destination: to be used in TVET organizations for training in specialties 1304000 “Computers and software” and 1305000 “Information systems”

USED ABBREVIATIONS AND DESIGNATIONS

BC	Basic Competence
BM	Basic Module
SCES	State compulsory education standard
K&S	Knowledge & skills
AC	Assessment Criteria
NCO	National Classification of Occupations
NQF	National Qualifications Framework
NQS	National Qualifications System
GCEA	General Classifier of Economic Activities
EP	Education Program
SQF	Sectorial Qualifications Framework
PS	Professional Standard
PC	Professional Competence
PM	Professional Module
WG	Working Group
RK	Republic of Kazakhstan
LO	Learning Outcome
SM	Special Module
QMS	Quality Management System
TVET	Technical and Vocational Education and Training
TVE&PSE	Technical and Vocational Education and Post-Secondary Education

PASSPORT OF THE WORKING EDUCATION PROGRAM

Name (code and name of the specialty): 1304000 – “Computers and software”

Name and code of qualification: 1304123 – “Software Support Specialist”

The education program purpose: Preparation of qualified middle-level specialists for the works implementation on the technical support of information systems in various sectors of the economy of the Republic of Kazakhstan

Level of education: technical and professional

Level of professional qualification: Specialist of middle level

Levels of qualifications for NQF/SQF: 4

Area of professional activity: information and communication technologies

Type (s) of work activity:

1. Maintenance of software support;
2. Installation and de-installation, maintenance of software;

Object(s) of professional activity: IT departments of enterprises and organizations of various branches of the economy of the Republic of Kazakhstan

Features of the program: Ability to use the dual form of training, credit training system, modular technology

Form of education: Full-time

Terms of training: 3 years 10 months.

Language of training: Russian

Amount of credits/hours: 6588 hours.

Requirements for students: individuals with basic secondary education

* It is indicated by the parameters of the SFQ (Methodological recommendations for the development and design of the branch framework of qualifications, Astana, 2016).

** To be indicated on the PS (Methodological recommendations on development and registration of professional standards, Astana, 2017)

*** The systems, objects, phenomena, processes, technologies for which, activity is directed, are indicated.

**** Identifies dual education / distance learning / credit technology

***** The previous education is indicated: basic secondary/general secondary/technical and vocational education

COMPETENCE PROFILE

<p>The purpose of the training: performance of work on the technical support of information systems in various sectors of the economy of the Republic of Kazakhstan</p>		<p>After successful completion of the program, the trainee will be able to perform work on the technical support of software products of information systems in different sectors of the economy of the Republic of Kazakhstan</p>
<p>Name of section, section, group, class and subclass according to GCEA* (by professional standard):</p>		<p>J Information and communication 62 Computer programming, consulting and other related services 62.0 Computer programming, consulting and other related services 62.01 Computer programming activities 62.01.1 Software development</p>
<p>Areas of competence (on the basic labor functions of the professional standard or the profession analysis) **</p>		<p>1. Software installation and updating of the maintained software 2. Using of service utilities for software 3. Hardware and software maintenance 4. Installation and de-installation of the software</p>
<p>Basic competence</p>		
Competence code	Competences (<i>in compliance with labor functions</i>)	Module
BC 1	Apply of professional vocabulary, make business papers in the field of professional activity	BM 1. The use of professional vocabulary, the preparation of business papers in the field of professional activity.
BC 2	Develop and improve physical qualities	BM 2 Development and improvement of physical qualities
BC 3.	Apply the basics of philosophical knowledge, social sciences for socialization and adaptation in society and the workforce.	BM 3. Application of the foundations of philosophical knowledge, social sciences for socialization and adaptation in society and the workforce.

BC 4	Apply basic knowledge of economics in professional activities	BM 4. The use of basic knowledge of the economy in professional activities
BC 5.	Understand the history of Kazakhstan, its role and the place of Kazakhstan in the world community	BM 5. Understanding the history of Kazakhstan, the role and place of Kazakhstan in the world community
BC 6.	Apply first aid techniques, methods of protection in emergency situations	BM 6. The use of first-aid techniques, methods of protection in emergency situations
Professional competence		
PC 1	Perform installation and configuration of software	PM 1. Install and configure software
PC 2	Update the software in use	PM 2. Updating of the operated software
PC 3	Provide quality software administration	PM 3. Software administration
PC 4	Use modern service utilities for software	PM 4. Modern service utilities for software
PC 5	Perform installation and configuration of utilities for software interaction with hardware	PM 5. Installation and setup of utilities for interaction of the software with the hardware
PC 6	Diagnose the state of hardware and software	PM 6. Diagnostics of hardware and software status
PC 7	Service hardware and software	PM 7. Service maintenance of hardware and software
PC 8	Develop, configure, and install software	PM 8. Organization of network administration

LIST OF MODULES AND LEARNING OUTCOMES

Competence	Learning outcomes (in accordance with professional objectives)	Evaluation criteria for learning outcomes	Disciplines forming the module
<p>BM 1. Application of professional vocabulary, the preparation of business papers in the field of professional activity</p>	<p>LO 1. To possess the grammar and terminology of the Kazakh (Russian) and foreign language for communication in the sphere of their professional activities</p>	<p>1. Knowledge of lexical and grammatical material in the specialty necessary for professional communication</p>	<p>Professional Kazakh (Russian) language Professional foreign language Office work in the state language</p>
		<p>2. Understanding the value of written and oral communications in the state and other languages</p>	
		<p>3. Implementation of interpersonal contacts and communication of participants in the educational process in terms of multilingualism</p>	
	<p>LO 2. To possess the translation technique (with a dictionary) of professionally-oriented texts</p>	<p>1. Using dictionaries for translating texts</p>	
		<p>2. Application of specialty terminology in the state and other languages</p>	
		<p>3. Reading and translation (with a dictionary) of professional texts</p>	
	<p>LO 3. To demonstrate the ability to ¹⁰ successfully</p>	<p>1. Manifestation of ability for successful oral and written</p>	

	verbal and written communication in the state and other languages	<p>communication in the state and other languages.</p> <p>2. Application of communication skills to establish and develop relations of cooperation and partnership</p> <p>3. Using written and oral communications to exchange information, establish and maintain business relationships</p>	
<p>BM 2. Application of the basics of philosophical knowledge, social sciences for socialization and adaptation in society and the workforce</p>	<p>LO 1.To know basic concepts and information of philosophy, political science, cultural studies and sociology</p>	<p>1. Understanding the essence and essence of the concepts, categories and information of philosophy, political science, cultural studies and sociology</p>	<p>Basic Philosophy Cultural Studies Fundamentals of Sociology and Political Science Fundamentals of Law</p>
		<p>2. Identification of problems and interrelations of the main categories and concepts of philosophy, political science, cultural studies and sociology</p>	
		<p>3. Analysis of various points of view of philosophy, political science, cultural studies and sociology</p>	
	<p>LO 2. To understand</p>	<p>1. Characteristics of the structure of the</p>	

	international political processes, the geopolitical situation and moral values, and the norms that form tolerance and an active personal stance.	<p>political system, history and the current state of the world and traditional religions</p> <p>2. Defining differences in extremist, radical and terrorist ideologies</p> <p>3. Tolerant perception of social, ethnic, religious and cultural differences</p>	
	LO 3. To possess basic concepts and information about the main branches of law	<p>1. Knowledge of the basic provisions of criminal, civil and family law and information about taxes</p> <p>2. Understanding of responsibility for administrative and corruption offenses and respect for the principles of law and order</p> <p>3. Protection of rights in accordance with the labor law</p>	
BM 3. Application of basic knowledge of economics in professional activities	LO 1. To determine the forms and types of property, types of plans, basic economic indicators of an enterprise	<p>1. Understanding of the laws and principles of a market economy, tax policy, sources of inflation, the main stages and content of planning</p> <p>2. Performance of necessary economic calculations using mathematical methods to determine the main</p>	Fundamentals of Economics and Management

		economic indicators of the enterprise	
		3. Defining of the main economic indicators of the enterprise	
	LO 2. To understand the development trends of the world economy, the main objectives of the state's transition to a green economy	1. Characteristics of the trends of the world economy	
		2. Understanding the main objectives of the state transition to a "green" economy	
		3. Applying the basic methods of calculating gross domestic product and gross national product for the state's transition to a green economy	
	LO 3. To determine the possibility of success and the risk of entrepreneurship	1. Characteristics of goals, factors, conditions, organizational and legal forms of business, management	
		2. Understanding the factors that determine entrepreneurial success	
		3. Drawing up a business plan	
BM 4. Application of first-aid techniques, methods of protection in emergency situations	TO 1. To know the basic concepts, methods of first aid and methods of protection in emergency	1. Understanding of legal, regulatory, technical and organizational foundations of life safety in emergency situations	Health and Safety
		2. Awareness of fire	

	situations	and industrial safety rules, rules of conduct, methods and means of protecting people in emergency situations (accidents, catastrophes, natural disasters)
		3. Recognition of the main natural and man-made hazards
	LO 2.To comply with safety regulations, fire safety and anti-terrorism security requirements	1. Assessing the risk of hazards associated with violations of safety regulations, fire safety, anti-terrorism protection requirements and the occurrence of emergency situations
		2. Skills of compliance with the rules of fire and industrial safety, methods of first aid to victims
		3. Compliance with safety regulations and labor protection
	LO 3.To apply first aid techniques, methods of protection in emergency situations.	1. Formation, deepening of knowledge and understanding in the need to use first aid techniques
2. The use of protection methods in conditions of danger to life and health, in		

		emergency situations and in their professional activities	
		3. The use of practical skills to ensure the safety of life and health in terms of training exercises	
BM 5. Development and improvement physical qualities	LO 1. To strengthen health and abide by the principles of a healthy lifestyle.	1. Understanding and adhering to the fundamentals and culture of a healthy lifestyle	Physical education
		2. Characteristics of the physiological basis of the respiratory, circulatory and energy supply systems under muscle loads	
		3. Performing a set of exercises for general physical training	
	LO 2. To improve physical qualities and psycho-physiological abilities	1. Characteristics of the basics of physical activity and methods of its regulation	
		2. Selection and application of methods and means of physical culture to improve the basic physical qualities	
		3. Implementation of control standards and tests provided by the program	
LO 3. To provide first	1. Understanding the causes of injury		

	aid for injuries and accidents.	during exercise	
		2. Using injury prevention methods	
		3. Providing medical care for injuries	
BM 6. Understand the history of Kazakhstan, its role and influence of Kazakhstan in the world community	LO 1. To list the main historical events	1. Understanding the essence of historical events from antiquity to the present	History of Kazakhstan
		2. Disclosure of the role and place of the Kazakh people in the common Turkic community, in the system of nomadic civilization, in the development of the historical and cultural community of the peoples of the Eurasian world	
		3. Chronology of major historical events	
	LO 2. To establish causal relationships of historical events.	1. Understanding the facts, processes and phenomena of historical events	
		2. Determination of the main facts, processes and phenomena that reflect and characterize the integrity and consistency of the history of Kazakhstan	

		3. Establishing causal relationships of historical events	
	LO 3. To assess the achievements of independent Kazakhstan	1. Understanding the nature and purpose of political and social changes taking place in the Republic of Kazakhstan after independence	
		2. Characteristics of the achievements of independent Kazakhstan	
		3. Evaluation of the achievements of independent Kazakhstan	

Module name	The learning outcomes (in accordance with professional objectives)	Assessment criteria for learning outcomes	Disciplines forming the module
Professional modules			
PM 1. Install and configure software	LO 1.1 To describe the software installation package	1. Definition of the installation package structure	Operating Systems System software
		2 Software package management	
		3 Creating installation packages	
	LO 1.2 To identify the	1. Working with repositories	

	required version of Open Source in repositories.	2. Definition of programs in the repository		
		3. Installation program from repository		
	LO 1.3 To install licensed and free software	1. Listing the main types of software		
		2. Installing licensed software		
		3. Installing free software		
	LO 1.4. To determine the structure of the operating system	1. Characteristics of modern server operating systems		
2. Description of the structure of server operating systems				
3. Installing server operating systems				
PM 2. Upgraded software update	LO 2.1 To work with software licensing	1. Basic software licensing analysis.	Software Standards and Licensing	
		2. Use of software accounting rules		
		3. Use of sites to update the license key	Software Modules and Libraries	
	LO 2.2 To renew license and find software download errors	1. Identifying the types of errors when downloading software		
		2. Detection of software download errors		
		3. License renewal		
	LO 2.3 To install additional	1. Definition of additional modules, software libraries		

	software modules and / or libraries	2. Installation of additional modules, software libraries	
		3. Application OpenSource software	
PM 3. Software administration	LO 3.1 To determine the structure of the hardware complex	1. Definition of the structure of the hardware complex	Complex of technical means of information and communication systems Application package
		2. List of features of the hardware complex to support the software.	
		3. Verification of hardware and software compliance	
	LO 3.2. To manage software operation	1. Application of the basics of software administration	
		2. Software operation management	
		3. Software setup	
	LO 3.3 To install additional modules	1. Definition of additional modules for software operation	
		2. Removing software modules	
		3. Configuring software modules	
PM 4. Modern service utilities for software	LO 4.1 To determine the structure of the software	1. Analysis of software structure	Software Administration
		2. Installation of additional modules in software.	

		3. Removal of additional modules in the software	Network Software Administration
LO 4.2 To apply database maintenance standards	1. Identification of software maintenance standards		
	2. Analysis of software maintenance standards		
	3. Application of software maintenance standards.		
LO 4.3 Administer software	1. Using the basics of software administration.		
	2 Administration of software on the base, full package and on request		
	3 Software administration, regarding its complexity.		
PM 5. Installing and configuring utilities for software interaction with hardware	LO 5.1 To identify modern service utilities, tools, their capabilities	1. Analysis of modern service utilities	Modern service utilities
		2. Application of software tools and commands.	
		3. Application of utilities and tools for software maintenance	
	LO 5.2 To use modern tools that provide service for software (fast	1. List of standard operating system commands	
		2. Definition of service tools	

	download, check, update, etc.)	3. Application of service tools	
	LO 5.3 To check for viruses and archive software	1. Enumeration of the main types of viruses and antivirus programs.	
		2 Characterization of archiving methods	
		3. Virus checking and software archiving.	
	LO 5.4. Configure network services	1. Configure the server part of the service	
		2. Configure the client side of the service	
		3. Configure service consistency and access control	
PM 6. Diagnosis of hardware and software status	LO 6.1 To determine the structure of the computer hardware, including multiprocessor and multicomputer systems	1. Description of the structure of the hardware of computers, including multiprocessor and multicomputer systems	Multiprocessor and multicomputer systems
		2. Compliance analysis of computer hardware and software	Server operating systems and applications
		3 Verifying the operation of computer hardware	Software Testing Methods

	LO 6.2 To identify the main models of modern computing systems and networks architectures	1 Characteristics of computer architecture models	
		2. Characteristics of network models	
		3. Understanding of network topologies, including when using a multi-computer system	
	LO 6.3.To install drivers for software interaction with hardware.	1. Characteristics of modern drivers for interacting with hardware	
		2. Checking driver compatibility	
		3. Installing drivers	
	LO 6.4. To diagnose performance, troubleshoot hardware problems and hardware failures.	1. Understanding Hardware Diagnosis Methods	
		2. Fulfillment of hardware malfunctions	
		3. Performing hardware maintenance and documenting corrections in the operation of the hardware computer	
		4. Application of information recovery methods	
PM 7. Service maintenance of	LO 7.1 To use file systems	1. Characteristic types of modern file systems	Modern file systems

hardware and software		AC 1.2. Working with the file system in various operating systems.	Mounting file system
		AC 1.3 Installation of the file system	
	TO 7.2 Describe various types of software	AC 2.1 Enumeration and characterization of various types of system software.	
		AC 2.2 Characteristics of various types of service software	
		AC 2.3 Characteristics of the types of application software	
	TO 7.3. Install system, service, application programs	AC 3.1 Installing server operating systems	
		AC 3.2 Installation of service programs	
AC 3.3 Installing applications			
PM 8. Network Management Organization	TO 8.1 Characterize the main types of computer networks	AC 1.1 Interpreting the basics of building computer networks	Computer networks Computer and Network Architecture
		AC 1.2 Characteristics of the main types of computer network topologies	
		AC 1.3 Application of the main types of computer network topologies	
	TO 8.2 Analyze the architecture of computing	AC 2.1 Characteristics of the architecture of computing systems	

	systems and networks	and networks	
		2. Characteristics of models of multiprocessor and multicomputer systems	
		3. Characteristics of models of computing systems and networks	
	LO 8.3.To check hardware and software for compatibility	1 Performance of hardware verification	
		2 Performing software verification	
		3. Check for compatibility of hardware and software.	

Specification of the basic module 1 "Application of professional vocabulary, the preparation of business papers in the field of professional activity"

Scope of competence	
Module name and code	Application of professional vocabulary, the preparation of business papers in the field of professional activity
Purpose of the module	After studying this module, the student will be able to solve actual problems of communication in various fields of professional activity;
Level of professional qualifications	4
Learning outcomes by module	LO1. To possess the grammar and terminology of the Kazakh (Russian) and foreign language for communication in the sphere of their professional activities LO2.To know the translation technique (with a dictionary) of professionally-oriented texts LO 3. To demonstrate the ability for successful oral and written communication in the state and other languages
Summary of content (sections, topics)	1.Knowing lexical and grammatical material in the specialty necessary for professional communication 2. Understanding the value of written and oral communication in the state and other languages 3. Implementation of interpersonal contacts and communication of participants in the educational process in a multilingual environment 4. Using dictionaries for translating texts 5. Application of terminology in the specialty in the state and other languages 6. Reading and translation (with a dictionary) of professional texts 7. The manifestation of the ability for successful oral and written communication in the state and other languages 8. The use of communication skills to establish and develop relations of cooperation and partnership 9. Use of written and oral communications to exchange information, establish and maintain business relationships.
Prerequisites	Kazakh language, Russian language, foreign language

Disciplines forming the module	Professional Kazakh (Russian) language, professional foreign language, office work in the state language
Module type (mandatory, optional)	Mandatory
Labor intensity (credits / academic hours)	7 credits/210 hours
Duration of the module	3 semester
Form of training	Full-time
Technology of training	Modular
Forms of organization of the educational process.	Lecture, independent work, practical lesson.
Teaching methods	Verbal, visual, practical, control, self-control.
Forms of control	Pass fail exam, exam
Required resources	Personal computer, software.
Language of instruction	Russian, Kazakh
Post-requisites	Industrial and pre-diploma practice

Specification of the basic module 2
“Development and improvement of physical qualities”

Scope of competence	
Module name and code	Development and improvement of physical qualities
Purpose of the module	After studying this module, students will be able to develop and improve their physical qualities.
Level of professional qualifications	4
Learning outcomes by module	LO1. To strengthen health and healthy lifestyle LO2. To improve physical qualities and psycho-physiological abilities LO 3. To provide first aid for injuries and accidents.
Summary of content (sections, topics)	1. Understanding and adhering to the fundamentals and culture of a healthy lifestyle 2. Characterization of the physiological bases of the activity of the respiratory, circulatory and energy supply systems under muscle loads 3. Performing a set of exercises for general physical training. 4. Characteristics of the basics of physical activity and methods of its regulation 5. Selection and application of methods and means of physical culture to improve the basic physical qualities 6. Implementation of control standards and tests provided by the program 7. Understanding the causes of injury during exercise 8. Using methods of injury prevention 9. Provision of first aid for injuries. Subjects from disciplines: Physical Education
Prerequisites	Physical Culture
Disciplines forming the module	Physical Culture
Module type (mandatory, optional)	Mandatory
Labor intensity (credits RK /	6 credits/180 hours

academic hours)	
Duration of the module	semester
Form of training	Full-time
Technology of training	Modular
Forms of organization of the educational process.	Lecture, independent work, practical lesson.
Teaching methods	Person-oriented, practice-oriented, testing, presentation, report, message, creative task
Forms of control	Pass fail exam, exam
Required resources	Gymnasium, sports equipment, safety regulations
Language of instruction	Russian, Kazakh
Post-requisites	PM 1 - PM 8

Specification of the basic module 3 – “Application of the basics of philosophical knowledge, social sciences for socialization and adaptation in society and the workforce”

Scope of competence	
Module name and code	Application of the basics of philosophical knowledge, social sciences for socialization and adaptation in society and the workforce
Purpose of the module	After studying this module, students will be able to apply the basics of philosophical knowledge, social sciences for socialization and adaptation in society and the workforce.
Level of professional qualifications	4
Learning outcomes by module	<p>LO1. To know the basic concepts and information of philosophy, political science, cultural studies and sociology</p> <p>LO2. To understand international political processes, geopolitical situation and moral values, and norms that form tolerance and an active personal attitude</p> <p>LO 3. To know basic concepts and information about the main branches of law</p>
Summary of content (sections, topics)	<ol style="list-style-type: none"> 1. Understanding of the essence and essence of concepts, categories and information of philosophy, political science, cultural studies and sociology 2. Identification of problems and interrelations of the main categories and concepts of philosophy, political science, cultural studies and sociology 3. Analysis of various points of view of philosophy, political science, cultural studies and sociology 4. Characteristics of the structure of the political system, history and current state of the world and traditional religions 5. Definition of differences of extremist, radical and terrorist ideologies 6. Tolerant perception of social, ethnic, religious and cultural differences. 7. Possession of the basic provisions of criminal, civil and family law and information about taxes 8. Understanding of responsibility for

	<p>administrative and corruption offenses and observance of the principles of law and order</p> <p>9. Protecting rights in accordance with labor laws</p> <p>Topics of the disciplines: Fundamentals of Philosophy, Cultural Studies, Fundamentals of Law, Fundamentals of Sociology and Political Science</p>
Prerequisites	Social Studies
Disciplines forming the module	Basics of Philosophy, Cultural Studies, Basics of Sociology and Political Science, Basics of Law
Module type (mandatory, optional)	Mandatory
Labor intensity (credits / academic hours)	7 credits/210 hours
Duration of the module	3 semester
Form of training	Full-time
Technology of training	Modular
Forms of organization of the educational process.	Lecture, independent work, practical lesson.
Teaching methods	Verbal, visual, practical, control, self-control.
Forms of control	Pass fail exam
Required resources	Personal computer, software.
Language of instruction	Russian, Kazakh
Post-requisites	Industrial and pre-diploma practice

Specification of the basic module 4 “Application of basic knowledge of economics in professional activities”

Scope of competence	
Module name and code	Application of basic knowledge of economics in professional activities
Purpose of the module	After studying this module, students will be able to apply basic economic knowledge in their professional activities.
Level of professional qualifications	4
Learning outcomes by module	LO1. To determine the forms and types of ownership, types of plans, basic economic indicators of the enterprise LO2. To understand the development trends of the world economy, the main objectives of the transition to a green economy LO 3.To determine the possibility of success and the risk of entrepreneurship
Summary of content (sections, topics)	1. Understanding of the laws and principles of a market economy, tax policy, sources of inflation, the main stages and content of planning 2. Performance of necessary economic calculations using mathematical methods to determine the main economic indicators of the enterprise 3. The definition of the main economic indicators of the enterprise 4. Characteristics of the trends of the world economy 5. Understanding the main objectives of the state’s transition to a green economy 6. Application of basic methods for calculating gross domestic product and gross national product for the state’s transition to a green economy 7. Characteristics of goals, factors, conditions, organizational and legal forms of business, management 8. Understanding the factors that determine business success 9. Drawing up a business plan

	Topics from disciplines: Basics of Economics
Prerequisites	Social Studies
Disciplines forming the module	Fundamentals of Economics
Module type (mandatory, optional)	Mandatory
Labor intensity (credits / academic hours)	3 credit/90 hours
Duration of the module	semester
Form of training	Full-time
Technology of training	Module
Forms of organization of the educational process. Teaching methods	Lecture, independent work, practical lesson. Student-oriented, practice-oriented, testing, presentation, report, message, interview, essay, creative task
Forms of control	Pass fail exam
Required resources	Personal computer, software.
Language of training	Russian, Kazakh
Post-requisites	Industrial and pre-diploma practice, graduation project

Specification of the basic module 5 – “Understanding the history, role and place of Kazakhstan in the world community”

Scope of competence	
Module name and code	Understanding of the history of Kazakhstan, the role and influence of Kazakhstan in the world community
Purpose of the module	After studying this module, students will understand the history of Kazakhstan, its role and the place of Kazakhstan in the world community.
Level of professional qualifications	4
Learning outcomes by module	LO1. To list the main historical events LO2. To establish causal relationships of historical events LO 3. To assess the achievements of independent Kazakhstan
Summary of content (sections, topics)	<ol style="list-style-type: none"> 1. Understanding the essence of historical events from antiquity to the present 2. Disclosure of the role and place of the Kazakh people in the common Turkic community, in the system of nomadic civilization, in the development of the historical and cultural community of the peoples of the Eurasian world 3. Compiling a chronology of major historical events 4. Understanding the facts, processes and phenomena of historical events 5. Main facts, processes and phenomena that reflect and characterize the integrity and consistency of the history of Kazakhstan 6. Establishing causal relationships of historical events 7. Understanding the nature and purpose of the political and social changes taking place in the Republic of Kazakhstan after independence 8. Characteristics of the achievements of independent Kazakhstan 9. Evaluation of the achievements of independent Kazakhstan

	Themes from disciplines: History of Kazakhstan
Prerequisites	History
Disciplines forming the module	History of Kazakhstan
Module type (mandatory, optional)	Mandatory
Labor intensity (credits / academic hours)	4 credit/120 hours
Duration of the module	semester
Form of training	Full-time
Technology of training	Modular
Forms of organization of the educational process. Teaching methods	Lecture, independent work, practical. Student-oriented, practice-oriented, testing, presentation, report, message, interview, essay, creative task
Forms of control	Pass fail exam, exam
Required resources	Personal computer, software.
Language of instruction	Russian, Kazakh
Post-requisites	

Specification of the basic module 6 – “Application of first-aid techniques, methods of protection in emergency situations”

Scope of competence	
Module name and code	Application of first-aid techniques, methods of protection in emergency situations
Purpose of the module	After studying this module, students will be able to use first aid techniques and methods of protection in emergency situations.
Level of professional qualifications	4
Learning outcomes by module	<p>LO1. To know the basic concepts, methods of first aid and methods of protection in emergency situations</p> <p>LO2. To comply with safety regulations, fire safety and anti-terrorism security requirements.</p> <p>LO 3. To apply first aid techniques, methods of protection in emergency situations.</p>
Summary of content (sections, topics)	<ol style="list-style-type: none"> 1. Understanding of legal, regulatory, technical and organizational foundations of life safety in emergency situations 2. Knowledge of fire and industrial safety rules, rules of conduct, methods and means of protecting people in emergency situations (accidents, catastrophes, natural disasters) 3. Recognition of the main natural and man-made hazards 4. Assessing the risk of hazards associated with violations of safety regulations, fire safety, anti-terrorism protection requirements and the occurrence of emergency situations 5. Skills of compliance with the rules of fire and industrial safety, methods of first aid to victims 6. Compliance with safety regulations and labor protection 7. Formation, deepening of knowledge and understanding of the need to use first aid techniques 8. The use of protection methods in conditions of danger to life and health, in

	<p>emergency situations and in their professional activities</p> <p>9. The use of practical skills to ensure the safety of life and health in the context of training exercises</p> <p>Subjects from disciplines: Labor protection and safety engineering</p>
Prerequisites	Computer science
Disciplines forming the module	Health and Safety
Module type (mandatory, optional)	Mandatory
Labor intensity (credits / academic hours)	3 credit/90 hours
Duration of the module	семестр
Form of training	Full-time
Technology of training	Module
Forms of organization of the educational process.	Lecture, independent work, practical lesson.
Teaching methods	Student-oriented, practice-oriented, testing, presentation, report, message, interview, essay, creative task
Forms of control	Pass fail exam, exam
Required resources	Personal computer, software.
Language of instruction	Russian, Kazakh
Post-requisites	Industrial and pre-diploma practice

Specification of the professional module 1 – “Software Installation and Configuration”

Scope of competence	
Module name and code	Install and configure software
Purpose of the module	After studying this module, students will be able to perform work on installing and setting up software.
Level of professional qualifications	4
Learning outcomes by module	LO1. To describe the software installation package LO2. To reveal the necessary version of Open Source in repositories LO3. To install licensed and free software LO 4. To define the structure of the operating system
Summary of content (sections, topics)	1. Definition of the installation package structure 2. Manage software packages 3. Create installation packages 4. Working with repositories 5. Definition of programs in the repository 6. Installing the program from the repository 7. Listing of main types of software. 8. Installing licensed software 9. Installing free software 10. Characteristics of modern server operating systems 11. Description of the structure of server operating systems 12. Installing server operating systems Topics from disciplines: Operating Systems, System Software
Prerequisites	Computer science
Disciplines forming the module	Operating Systems, System Software
Module type (mandatory, optional)	Mandatory

Labor intensity (credits / academic hours)	14 credits/420 hours
Duration of the module	semester
Form of training	Full-time
Technology of training	Modular
Forms of organization of the educational process. Teaching methods	Lecture, independent work, practical lesson. Student-oriented, practice-oriented, testing, presentation, report, message, interview, essay, creative task
Forms of control	Pass fail exam, exam
Required resources	Personal computer, software, “Installation and maintenance of software, personal computers, servers, peripherals and equipment”, Uch.posobie, Bogomarova G.I., 2015.
Language of training	Russian, Kazakh
Post-requisites	Complex of technical means of information and communication systems, application package

Specification of the professional module 2 – “Upgrading software in operation”

Scope of competence	
Module name and code	Upgrading software in operation
Purpose of the module	After studying this module, students will be able to update the software being operated.
Level of professional qualifications	4
Learning outcomes by module	LO1. To work with software licensing LO2. To extend license and find software download errors LO3. To install additional software modules and / or libraries.
Summary of content (sections, topics)	1. Analysis of software licensing basics 2. Using software accounting rules 3. Using sites to update the license key 4. Identifying the types of errors when downloading software 5. Identifying software download errors 6. License renewal 7. Definition of additional modules, software libraries 8. Installation of additional modules, software libraries 9. Application of open source software
Prerequisites	Computer Science, Operating Systems
Disciplines forming the module	Software Standards and Licensing, Software Modules and Libraries
Module type (mandatory, optional)	Mandatory
Labor intensity (credits / academic hours)	6 credits/180 hours
Duration of the module	semester
Form of training	Full-time
Technology of training	Modular
Forms of organization of the	Lecture, independent work, practical lesson.

educational process.	Student-oriented, practice-oriented, testing, presentation, report, message, interview, essay, creative task
Teaching methods	
Forms of control	Pass fail exam, exam
Required resources	PC, Software. “Installation and maintenance of software, personal computers, servers, peripherals and equipment”, Training material, G.I.Bogomaroova, 2015.
Language of instruction	Russian, Kazakh
Post-requisites	Modern utility, Network service

Specification of the professional module 3 – “Software Administration”

Scope of competence	
Module name and code	Software administration
Purpose of the module	After studying this module, students will be able to perform software administration work.
Level of professional qualifications	4
Learning outcomes by module	LO1. To define the structure of the hardware complex. LO2. To administer the software LO3. To install additional modules
Summary of content (sections, topics)	1. Determination of the structure of the hardware complex 2. Listing the features of the hardware complex for software maintenance 3. Verification of the compliance of the hardware and software 4. Application of basic software administration 5. Management of software operation 6. Setting up software 7. Definition of additional modules for software operation 8. Configure software modules Topics from disciplines: Complex technical means of information and communication systems, Application Package
Prerequisites	Information Science, Operating Systems
Disciplines forming the module	Complex of technical means of information and communication systems, Application package
Module type (mandatory, optional)	Mandatory
Labor intensity (credits /	11credits/330 hours

academic hours)	
Duration of the module	semester
Form of training	Full-time
Technology of training	Modular
Forms of organization of the educational process. Teaching methods	Lecture, independent work, practical lesson. Student-oriented, practice-oriented, testing, presentation, report, message, interview, essay, creative task
Forms of control	Pass fail exam, exam
Required resources	PC, Software. “Installation and maintenance of software, personal computers, servers, peripherals and equipment”, Training aid, G.I.Bogomarova, 2015.
Language of instruction	Russian, Kazakh
Post-requisites	Administration of software, Administration of network software

Specification of the professional module 4 – “Modern service utilities for software”

Scope of competence	
Module name and code	Modern software utilities for software
Purpose of the module	After studying this module, students will be able to use modern service utilities for software.
Level of professional qualifications	4
Learning outcomes by module	LO1. To define the software structure LO2. To apply database maintenance standards LO3. To administer the software
Summary of content (sections, topics)	1. Analysis of software structure 2. Installation of additional modules in software 3. Removal of additional modules in software 4. Identification of software maintenance standards 5. Analysis of software maintenance standards 6. Application of software maintenance standards 7. Using the basics of software administration 8. Administration of software on basic, complete package and on request. 9. Administration of software regarding its complexity Topics from the disciplines: software administration, Network Software Administration
Prerequisites	A complex of technical means of information and communication systems, application package
Disciplines forming the module	Administration of the software, Administration of the network software
Module type (mandatory, optional)	Mandatory
Labor intensity (credits / academic hours)	8 credits/240 hours
Duration of the module	semester

Form of training	Full-time
Technology of training	Modular
Forms of organization of the educational process. Teaching methods	Lecture, independent work, practical lesson. Student-oriented, practice-oriented, testing, presentation, report, message, interview, essay, creative task
Forms of control	Pass fail exam, exam
Required resources	PC, Software. “Installation and maintenance of software, personal computers, servers, peripherals and equipment”, Training aid, G.I.Bogomarova, 2015.
Language of instruction	Russian, Kazakh
Post-requisites	Multiprocessor and multicomputer systems, Server operating systems and applications

Specification of the professional module 5 – “Installing and configuring utilities for software interaction with hardware”

Scope of competence	
Module name and code	Installing and configuring utilities for software interaction with hardware
Purpose of the module	After studying this module, students will be able to perform work on installing and configuring utilities for software interaction with hardware.
Level of professional qualifications	4
Learning outcomes by module	<ol style="list-style-type: none"> 1. To identify modern service utilities, tools, their capabilities 2. To use modern tools that provide service for software (fast download, check, update, etc.) 3. To check for viruses and archive software. 4. To configure network services
Summary of content (sections, topics)	<ol style="list-style-type: none"> 1. Analysis of modern service utilities 2. Application of software tools and commands 3. Use of utilities and tools for software maintenance. 4. Listing standard operating system commands 5. Definition of service tools 6. Application of service tools 7. Listing the main types of viruses and antivirus programs. 8. Characteristics of archiving methods 9. Virus checking and software archiving 10. Configure the server part of the service. 11. Configure the client part of the service 12. Configure coordinated service operation and access control. <p>Topics from disciplines: Modern service utilities, Network service</p>
Prerequisites	Complex of technical means of information and communication systems, Package of applied programs, Operating systems

Disciplines forming the module	Modern utility utilities, Network service
Module type (mandatory, optional)	Mandatory
Labor intensity (credits / academic hours)	9 credits/270 hours
Duration of the module	semester
Form of training	Full-time
Technology of training	Modular
Forms of organization of the educational process. Teaching methods	Lecture, independent work, practical lesson. Student-oriented, practice-oriented, testing, presentation, report, message, interview, essay, creative task
Forms of control	Pass fail exam, exam
Required resources	Personal computer, software.
Language of instruction	Russian, Kazakh
Post-requisites	Server operating systems and applications

Specification of the professional module 6 – “Diagnosis of hardware and software status”

Scope of competence	
Module name and code	Diagnosis of hardware and software status
Purpose of the module	After studying this module, students will be able to diagnose the state of hardware and software.
Level of professional qualifications	4
Learning outcomes by module	<ol style="list-style-type: none"> 1. To define the structure of the computer hardware, including multiprocessor and multicomputer systems 2. To define the main models of architectures of modern computing systems and networks 3. To install drivers for software interaction with hardware. 4. To diagnose performance, troubleshoot hardware problems and hardware failures.
Summary of content (sections, topics)	<ol style="list-style-type: none"> 1. Description of the structure of the hardware of computers, including multiprocessor and multicomputer systems 2. Analysis of the compliance of computer hardware and software 3. Verification of the operation of the computer hardware 4. Characteristics of computer architecture models 5. Characteristics of network models 6. Understanding network topologies, including when using a multicomputer system 7. Characteristics of modern drivers for interaction with the hardware 8. Driver Compatibility Check 9. Installing drivers 10. Understanding hardware diagnostic methods 11. Identification of the malfunction of the hardware 12. Performing hardware maintenance and documenting patches in the hardware computer 13. Application of information recovery

	<p>methods</p> <p>Topics from the disciplines: Multiprocessor and multicomputer systems, Server operating systems and applications, Software testing methods</p>
Prerequisites	Modern utility utilities, Network service
Disciplines forming the module	Multiprocessor and multicomputer systems, Server operating systems and applications, Software testing methods
Module type (mandatory, optional)	Mandatory
Labor intensity (credits / academic hours)	17 credits/540 hours
Duration of the module	semester
Form of training	Full-time
Technology of training	Modular
Forms of organization of the educational process. Teaching methods	<p>Lecture, independent work, practical lesson.</p> <p>Student-oriented, practice-oriented, testing, presentation, report, message, interview, essay, creative task</p>
Forms of control	Pass fail exam, exam
Required resources	<p>PC, software.</p> <p>“Computer architecture. Quantitative approach”. Management D. Patterson, J. Hennessy</p>
Language of instruction	Russian, Kazakh
Post-requisites	Architecture of computer systems and networks

Specification of the professional module 7 – “Network Management Organization”

Scope of competence	
Module name and code	Development, configuration and installation of software
Purpose of the module	After studying this module, students will be able to develop, configure and install software.
Level of professional qualifications	4
Learning outcomes by module	<ol style="list-style-type: none"> 1. To characterize the main types of computer networks 2. To analyze the architecture of computing systems and networks 3. To check hardware and software for compatibility.
Summary of content (sections, topics)	<ol style="list-style-type: none"> 1. Interpretation of the basics of building computer networks 2. Characteristics of the main types of topologies of computer networks 3. Application of the main types of computer network topologies 4. Characteristics of the architecture of computing systems and networks 5. Characteristics of multiprocessor and multicomputer systems 6. Characteristics of models of computing systems and networks 7. Performance of hardware verification 8. Performance of software verification 9. Check for compatibility of hardware and software
Prerequisites	Multiprocessor and multicomputer systems, Server operating systems and applications
Disciplines forming the module	Computer Networks, Computer Systems and Networks Architecture
Module type (mandatory, optional)	Mandatory
Labor intensity (credits / academic hours)	18credits/570 hours
Duration of the module	semester

Form of training	Full-time
Technology of training	Modular
Forms of organization of the educational process. Teaching methods	Lecture, independent work, practical Student-oriented, practice-oriented, testing, presentation, report, message, interview, essay, creative task
Forms of control	Pass fail exam, exam.
Required resources	Personal computer, software.
Language of instruction	Russian, Kazakh
Post-requisites	Management and maintenance of remote disk space resources, Virtualization technologies and cloud computing

EDUCATION PROCESS PLAN

Code and profile of education:
Specialty:
Qualification:

1300000 – Communication, telecommunications and information technology.
 Electronic equipment
 1304000 - “Computers and Software”
 1304123 – “Software Support Specialist”

Form of training: full-time
 Normative period of study: 3 years 10 months based
 on the basic secondary education

Module code	Name of cycles, disciplines / modules, practices	Credit RoK	Exam	Differential testing	Amount of study time (clock)				Distribution by semesters	
					TOTAL	From them:				
						Theoretical training	Practical training**	Production training		Individual training
GED	General educational disciplines	48			1448	1448			1-2	
BM	Basic Modules	30			900	480	-	360	60	3-8
BM 1	Application of professional vocabulary, the preparation of business papers in the field of professional activity	7	+	+	210	120	-	60	30	3-8
BM 2	Development and improvement of physical	6		+	180	-	-	180	-	3-8

	qualities									
BM 3	Application of the basics of philosophical knowledge, social sciences for socialization and adaptation in society and the workforce	7		+	210	150	-	60		3-8
BM 4	Application of basic knowledge of economics in professional activities	3		+	90	60	-	30		3-8
BM 5	Understanding the history, role and place of Kazakhstan in the world community	4	+	+	120	120	-	-	-	3-8
BM 6	First aid and methods of protection in emergency situations	3		+	90	30	-	30	30	3-8
PM	Professional modules on working qualifications (including industrial training and professional practice)	48	+	+	1440	360	720	270	90	3-8
PM 1	Install and configure software	14	+	+	420	90	210	90	30	3-8
PM 2	Upgraded software update	6	+	+	180	60	90	30	-	3-8
PM 3	Software administration	11	+	+	330	90	150	60	30	3-6
PM 4	Modern service utilities for software	8	+	+	240	60	150	30	-	3-8
PM 5	Installing and configuring utilities for software interaction with hardware	9	+	+	270	60	120	60	30	3-8
PM	Professional modules for mid-level specialist qualifications (including in-service training and professional practice)	35	+	+	1050	330	420	210	90	3-8
PM 6	Diagnosis of hardware and software status	17	+	+	510	150	210	90	30	3-8
PM 7	Service maintenance of hardware and software	18	+	+	540	180	210	120	60	3-8
	Total:	161			4838	2618	1140	840	240	
PP	Pre-diploma practice	10			300		300			8

DP	Diploma project	9		270	180			90	8
IC	Intermediate certification	10		300	300				1-8
FE	Final examination	2		60	60				8
	Total for compulsory education			5768	3158	1440	840	330	
C	Consultations	13		400	400				1-8
O	Optional lessons	14		420	420				1-8
	Total:	219		6588	3978	1440	840	330	

Note:

* The forms of control (the number of course papers, examinations), the order of studying the disciplines (distribution by semester) are exemplary and can vary depending on the forms of study, the specifics of specialties, local and other conditions (circumstances), including, in accordance with the needs of employers.

** In accordance with the State compulsory education standard the Technical and Vocational Education, educational institutions can change up to 50% of the amount of study time allocated for the development of educational material for modules, up to 50% for each module and up to 60% (up to 80% for dual training) of vocational training and professional practice with keeping the total number of hours for compulsory education.