

**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 “Computer Equipment and Software”
(code and name of the specialty)

Level of professional training: Applied Bachelor

Duration of training: 2 years 10 months

Astana, 2018

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INTRODUCTION

The present educational program is prepared in accordance with the current Law 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 content of training in specialty 1304000 “Computer Science and Software”:

- State compulsory 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 on March 16, 2016;
- Sectorial qualifications framework, approved by protocol 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 company of system researches “FACTOR” in the edition on 24.04.2018;

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 system of technical and vocational education to the changing needs of society, the labor market economy. Flexibility of the program 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 students’ competencies in educational institutions in the form of basic educational results, the possibility of using a differentiated approach 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 middle-level specialist qualification, i.e. only after actually mastering of two or three competencies of the worker one can become a highly competent technician.

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

Purpose of the educational program: 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

Aim of the educational program: use in organizations of TVET for training in specialties 1304000 “Computer equipment and software” and 1305000 “Information systems”

LIST OF DESIGNATIONS AND ABBREVIATIONS

BC	Basic competence
BM	Basic module
SCES	State compulsory education standard
EQF	European qualification framework
K&S	Knowledge & Skills
NCO	National Classification of Occupations
NQF	National Qualifications Framework
NQS	National Qualifications System
GHM	General Humanitarian Module
GCEA	General Classifier of Economic Activities
GM	General Module
EP	Education Program
GPM	General Professional Module
SQF	Sectorial Qualifications Framework
PS	Professional Standard
PGE	Postgraduate education
PC	Professional competence
PM	Professional module
WG	Working group
RK	The Republic of Kazakhstan
LO	Learning Outcome
SM	Special module
SEM	Socio-economic module
TVET	Technical and vocational education
TVE&PSE	Technical and vocational education and post-secondary education

PASSPORT OF THE WORKING EDUCATION PROGRAM

Name (code and name of the specialty): 1304000 “Computer Equipment and Software”

Name and code of qualification: 1304134 – “Applied Bachelor for Software Support”

The purpose of the educational program: Preparation of the qualified specialists of applied bachelors for performance of works on technical support of information systems in different branches of the economy of the Republic of Kazakhstan

Level of education: technical and vocational

Level of professional qualification: applied bachelor

Levels of qualifications for NQF/SQF: 5

Area of professional activity: information and communication technologies

Type (s) of work activity:

To provide technical support for software, analyze and solve problems associated with the software.

Object (s) of professional activity: IT departments of enterprises and organizations of different sectors of the economy of the Republic of Kazakhstan.

The program features: Ability to use the dual form of training, credit training system, and modular training system

Form of training: Full-time

Terms of training: 2 years 10 months.

Language of instruction: Russian

Amount of credits / hours: 4960 hours.

Requirements for students: persons with general secondary education or technical and vocational 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 technical support for 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 information systems in various 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 analysis of the profession) **</p>		<p>1. Technical hardware and software support 2. Support for software users and analysis of software problems and changes 3. Transferring software to a new environment and removing software from service</p>
General (basic) competencies		
Com peten ce code		Module
BC 1	Use professional vocabulary, make business papers in the field of professional activity	BM 1. Application of professional vocabulary, preparation of business papers in the field of professional activity
BC 2	Apply the foundations of the social sciences for socialization and adaptation in society and the workforce	BM 2. Application of the fundamentals of philosophical knowledge, social sciences for the socialization and adaptation in society and the workforce
BC 3.	Apply basic knowledge of the economy in the professional activity	BM 3. Application of basic knowledge of the economy in professional activity
BC 4	Use first aid techniques,	BM 4. Use of first aid methods,

	methods of protection in emergency situations.	methods of protection in emergency situations.
BC 5.	Develop and improve the physical qualities	BM 5 Development and improvement of physical qualities
BC 6.	Understand the history of Kazakhstan, its role and the place of Kazakhstan in the world community	BM 6. Understanding the history of Kazakhstan, the role and place of Kazakhstan in the world community
Professional competences		
PC 1	To conduct preparatory work on the adoption of software for maintenance.	Conducting preparatory work on the adoption of software for maintenance.
PC 2	Develop a set of documentation for maintenance.	Development of a set of documentation for maintenance.
PC 3	Identify methods of software technical support.	Identification of methods of software technical support.
PC 4	Use software standards, methods and tools.	Use of software standards, methods and tools
PC 5	Plan the installation and configuration of the accompanying software	Planning of the installation and configuration of the accompanying software
PC 6	Predict, identify, analyze and eliminate problems in the operation of the hardware software complex and the accompanying software	Prediction, identification, analysis and elimination of problems in the operation of the hardware software complex and the accompanying software
PC 7	Implement measures to improve the quality of information services for software maintenance.	Implementation of measures to improve the quality of information services for software maintenance.
PC 8	Develop documentation support and information services for the operation of the software.	Development of documentation support for software operation
PC 9	Analyze the problems that arise in protecting information	Analysis of problems that arise in protecting information
PC 10	Develop information material on the transfer of software and organize the transfer of software	Development of information material on the transfer of software and organization of software transfer
PC 11	Develop an instruction to remove software from service.	Deinstallation of Software

LIST OF MODULES AND LEARNING OUTCOMES

Competence	Learning outcomes	Assessment criteria for learning outcomes	Disciplines forming the module								
BM1. Application of professional vocabulary, the preparation of business papers in the field of professional activity	LO 1. To have a lexical (1200-1400 lexical units) and a grammatical minimum necessary for reading, translating and communicating in the sphere of their professional activity.	1. Knowledge of lexical and grammatical material in the specialty necessary for professional communication.	Professional Kazakh (Russian) language; - Professional foreign language; Office work in the state language								
		2. The use of terminology in the specialty.									
		3. Defining the meaning of unfamiliar words and phrases using dictionaries and reference books									
		LO 2. To know the translation technique (with a dictionary) of professional-oriented texts				1 Reading and translation (with a dictionary) of professional texts.					
		2. Making coherent, logical, reasoned statements in accordance with the proposed topic									
		3. Work with organizational, administrative and reference documents									
	LO 3. To conduct professional dialogical speech and business negotiations in Kazakh (Russian) and foreign languages.	1. Logically and consistently express opinions in accordance with the situation.									
										2. Conducting dialogue in the process of professional communication.	
										3. Rendering of the main content of the conversation or the text heard.	

<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 the 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 international political processes, geopolitical situation and moral values, and norms that form tolerance and an active personal attitude</p>	<p>1. Characteristics of the structure of the political system, history and the current state of world and traditional religions</p>	
		<p>2. Determining differences in extremist, radical and terrorist ideologies</p>	
		<p>3. Tolerant perception of social, ethnic, religious and cultural differences</p>	
	<p>LO 3. To know the basic concepts and information about the main branches of law</p>	<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>	

		3. Protection of rights in accordance with the labor law	
BM 3 Application of basic knowledge of economics in professional activities	LO1. To determine the forms and types of ownership, types of plans, basic economic indicators of the enterprise	1. Understanding of the laws and principles of a market economy, tax policy, sources of inflation, the main stages and content of planning	Fundamentals of Economics and Management
		2. Performance of the necessary economic calculations using mathematical methods to determine the main economic indicators of the enterprise	
		3. Defining of the main 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	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	
	LO3. 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	
BM4	LO1.	1. Understanding of	Health and

Application of first-aid techniques, methods of protection in emergency situations	To know the basic concepts, methods of first aid and methods of protection in emergency situations	legal, regulatory, technical and organizational foundations of life safety in emergency situations	Safety
		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	
	LO2. To comply with safety regulations, fire safety and anti-terrorism security requirements.	1. Assessment of the risk of occurrence of hazards associated with violations of safety regulations, fire safety, anti-terrorism protection requirements and emergency situations	
		2. Knowledge of the 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	
BM5 Development and improvement of physical qualities	LO1. To strengthen health and 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 aid for injuries and accidents.	1. Understanding the causes of injury during exercise	
		2. Using injury prevention methods	
		3. Providing medical care for injuries	
BM6 Understanding the history, role and place 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 an 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	Learning outcomes (in accordance with professional objectives)	Evaluation criteria for learning outcomes	Disciplines that form the module

Professional modules			
PM 1. Conducting preparatory work on the adoption of software support	LO 1.To list requirements and software functionality	1. Characteristics of architectural models of modern computing systems 2. Determination of the device and operation of information systems 3. Characteristics of the principles of their interaction with the information system	Computer Architecture System software Application software
	LO 2.To choose standards, methods, tools, hardware for software maintenance work	1. Characteristic requirements and functionality of the accompanying software 2. Defining of the subject area 2.3. Description of business processes supported by software	
	LO 3. To apply standards, methodologies and methods of software maintenance, proactive software support	1. Description of the basics of standardization 2. Characteristics of software maintenance	

	technologies	methods 3. The use of proactive support technology	
PM 2. Development of a set of documentation for maintenance	LO 1. To define the subject area and business processes supported by the software.	1. Characteristics of the subject area 2. Description of business processes supported by software 3. Application of software development technology	Standardization of IT Software engineering technology
	LO 2. To characterize the structure and functioning of information systems and the principles of their interaction	1. Characteristic device information systems 2. Description of the functioning of information systems 3. Defining the principles of interaction of information systems	
	LO 3. To describe the life cycle and software development methodology.	1. Description of the life cycle of an information system 2. Characteristics of information systems	

		development methodology 3. Application of information systems development methodology	
PM 3 Definition of software technical support methods	LO 1. To apply methods of administration and monitoring of work, software settings	1. Characteristics of administration methods 2. Monitoring software performance 3. Applying software tuning methods	System software Software Development Technology
	LO 2. To apply functionality and methods of administration, database configuration, system and specialized software	1. Description of the principles of database administration 2. Configuring the database 3. Application of the functionality of specialized software	
	LO 3. To customize the operation of system software	1. Description of system software configuration methods 2. Applying software tuning methods 3. System Software Feature	

PM 4. Application of software standards, methods and tools	LO 1. To use standards in the field of software operation	<ol style="list-style-type: none"> 1. Defining of standards in the field of software operation 2. Using Software Standards AC 3. Maintenance of software in accordance with the standards 	Information Security Methods
	LO 2. To use in the work standards in the field of information security	<ol style="list-style-type: none"> 1. Description of standards in the field of information security 2. Defining information security methods 3. Application of information security methods 	Application software
	LO 3. To work with information processes automation tools (monitoring systems, Service desk)	<ol style="list-style-type: none"> 1. Description of automation of information processes 2. Application of monitoring system 3. Work with automation tools 	IT standardization
PM 5. Planning the installation and configuration of the accompanying software	LO 1. To plan the installation of hardware and software and accompanying software.	<ol style="list-style-type: none"> 1. Listing of software installation steps 2. Planning a software 	Parallel computing System

		<p>installation</p> <p>3. Maintenance software</p>	software
	LO 2.To manage information system hardware resources	<p>1. Hardware Resource Characteristics</p> <p>2. Hardware Resource Management</p> <p>3. Hardware installation</p>	
	LO 3. To install, update and configure supported software.	<p>1. Characteristics of software update principles</p> <p>2. Application of software configuration principles</p> <p>3. Software Update</p>	
PM 6. Forecasting, identifying, analyzing and eliminating problems in the operation of the hardware-software complex and the accompanying software	LO 1.To monitor software operation	<p>1. Description of software testing methods</p> <p>2. Software Testing</p> <p>3. Monitoring software performance</p>	<p>Software Testing</p> <p>Information Security Methods</p>
	LO 2. To comply with information security policies in the organization	<p>1. Characteristics of the basics of information security</p> <p>2. Understanding Information Security Policy</p>	

		3. Compliance with information security policy	
	LO 3.To evaluate and develop requirements for the hardware and software complex and the accompanying software, based on the prospects for their use	1. Description of software requirements AC 2. Development of software requirements 3. Evaluation of the prospects for the use of software	
PM 7. Implementation of measures to improve the quality of information services for software maintenance.	LO 1. To carry out activities for the maintenance of software in accordance with the developed catalog of information services	1. Characteristics of information resources and services 2. Characteristics of requirements and standards for information resources 3. Development of a catalog of information services	СУБД, Informational resources Software maintenance
	LO 2.To organize work with users on frequently asked questions	1. Creating a knowledge base structure for user issues 2. Creating a knowledge base 3. Knowledge Base Modification	
	LO 3.To develop	1. Determining	

	activities to improve the quality of software maintenance services	<p>the quality of software maintenance services</p> <p>2. Development of a plan to improve the quality of software maintenance services</p> <p>3. Implementation of measures to improve the quality of services</p>	
PM 8. Development of documentation support for software operation	LO 1. To analyze software offers for software upgrades and modifications.	<p>1. Description of software upgrade and modification principles</p> <p>2. Drafting proposals for software upgrades</p> <p>3. The formulation of proposals for the modification of the software proposal</p>	<p>Application software</p> <p>IT standardization</p> <p>System software</p>
	LO 2. To develop software documentation and information materials	<p>1. Characteristics of the principles of software operation</p> <p>2. Understanding of software</p>	

		documentation 3. Development of information materials on the operation of software	
	LO 3.To manage the process of handling software user requests	1. Determining the principles of processing user requests 2. Processing user requests 3. Monitoring the processing of user requests	
PM 9 Analysis of problems arising in the protection of information	LO 1.To apply software standards, methods and tools	1. Characteristics of software development standards 2. Elimination of system failures 3. Design improvement	Information Security Methods Application software
	LO 2. To use the concept of pro-active support of the organization	1. Expansion of software functionality 2. Using software testing methods 3. Testing software	Software maintenance
	LO 3.To create information systems	1. Characteristics of database development methods 2. Database	

		creation 3. Using Queries and Software Features СУБД	
PM 10. Development of information material on software migration	LO 1.To explain the nature of software migration	1. Description of software migration options 2. Characteristics of software migration stages 3. Migration analysis	Software maintenance Cloud computing System software
	LO 2.To analyze requirements and limitations for software migration to a new environment.	1. Characteristics of software migration requirements 2. Description of limitations for software migration 3. Requirements analysis	
	LO 3.To develop a model for migrating software to a new environment, agree on a migration plan and carry out work on migration	1. Migration model development 2. Coordination of migration plan 3. Migration work	

PM 11. Development of instructions for decommissioning software	LO 1.To develop and agree on a software decommissioning plan.	<ol style="list-style-type: none"> 1. Testing the availability of software for decommissioning 2. Analysis of the availability of software for decommissioning 3. Development of a decommissioning plan 	Software maintenance Cloud computing System software Software Testing
	LO 2. To archive and decommission the hardware and software complex according to the plan	<ol style="list-style-type: none"> 1. Description of archiving software 2. Preparation of decommissioning documentation 3. Archiving according to plan 	
	LO 3.To ensure the use of archived data after the decommissioning of software	<ol style="list-style-type: none"> 1. Description of backup methods 2. Characterization of recovery methods 3. Backup implementation 	

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

Scope of competence	Basic
Module name	The use 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	<ol style="list-style-type: none"> 1. To have a lexical (1200-1400 lexical units) and a grammatical minimum necessary for reading, translation and communication in the field of their professional activities. 2. To know the translation technique (with a dictionary) of professional-oriented texts. 3. To conduct professional dialogical speech and business negotiations in Kazakh (Russian) and foreign languages.
Summary of content (sections, topics)	<ol style="list-style-type: none"> 1. Knowledge of lexical and grammatical material in the specialty necessary for professional communication. 2. The use of terminology in the specialty. 3. Determine the meaning of unfamiliar words and phrases using dictionaries and reference books. 4. Reading and translation (with the dictionary) texts of a professional orientation. 5. Making coherent, logical reasoned statements in accordance with the proposed topic. 6. Logically and consistently express opinions in accordance with the situation. 7. Conducting dialogue in the process of professional communication. 8. Transmission of the main content of the conversation or the text heard. 9. An explanation of the topic of discussion and participation in its discussion.
Prerequisites	Kazakh, Russian, foreign languages

Disciplines forming the module	- Professional Kazakh (Russian) language - Professional foreign language, modern Russian (Kazakh) language, paperwork in the state language
Module type (mandatory, optional)	Required
Labor intensity (credits / academic hours)	7 credits/210 hours
Duration of the module	3-5 semester
Form of training	Full –time
Technology of training	Modular
Forms of organization of the educational process. Teaching methods	Lecture, practical.
Forms of control	Pass fail exam, exam
Required resources	Personal computer, software. Methodical literature T.I. Akhmetov "Professional Kazakh language"; T. M. Voiteleva “Russian language and culture of speech. Didactic materials ”; Lugovaya A.L. “English for students of energy specialties: study guide”;
Language of instruction	Russian, Kazakh
Post-requisites	Application of the basics of philosophical knowledge, social sciences for socialization and adaptation in society and the workforce

Specification of the basic module 2 “ Application of the basics of philosophical knowledge, social sciences for socialization and adaptation in society and the workforce ”

Scope of competence	
Module name	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 the social sciences for socialization and adaptation in society and workforce.
Level of professional qualifications	4
Learning outcomes by module	<ol style="list-style-type: none"> 1. To know the basic concepts and information of philosophy, political science, cultural studies and sociology 2. To understand international political processes, geopolitical situation and moral values, and norms that form tolerance and an active personal attitude 3. To know the basic concepts and information about the main branches of law
Summary of content (sections, topics)	<ol style="list-style-type: none"> 1. Understanding the essence and essence of the 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 the current state of the world and traditional religions 5. Determining differences in extremist, radical and terrorist ideologies 6. Tolerant perception of social, ethnic,

	<p>religious and cultural differences</p> <p>7 Knowledge of the basic provisions of criminal, civil and family law and information about taxes</p> <p>8. Understanding of responsibility for 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)	Required
Labor intensity (credits RK / academic hours)	7 credits/210 hours
Duration of the module	3 – 4 semester
Form of training	Full-time
Technology of training	Modular
Forms of organization of the educational process.	Lecture, independent work, practice.
Teaching methods	Verbal, visual, practical, control, self-control, 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 basic module 3 “ Application of basic knowledge of economics in professional activities ”

Scope of competence	
Module name	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	<ol style="list-style-type: none"> 1. To determine the forms and types of ownership, types of plans, basic economic indicators of the enterprise 2. To understand the development trends of the world economy, the main objectives of the transition to a green economy 3. To determine the possibility of success and the risk of entrepreneurship
Summary of content (sections, topics)	<ol style="list-style-type: none"> 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. Determination 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 transition to a "green" economy 6. Applying the basic methods of 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

	entrepreneurial success 9. Drawing up a business plan Topics of the disciplines: Fundamentals of Economics and Management
Prerequisites	Social Studies
Disciplines forming the module	Fundamentals of Economics and Management
Module type (mandatory, optional)	Mandatory
Labor intensity (credits / academic hours)	3 credits/90 hours
Duration of the module	3 – 4 semester
Form of training	Full –time
Technology of training	Modular
Forms of organization of the educational process. Teaching methods	Lecture, independent work, practice. Verbal, visual, practical, control, self-control, testing, presentation, report, message, interview, essay, creative task
Forms of control	Pass fail exam
Required resources	Personal computer, software
Language of instruction	Russian, Kazakh
Post-requisites	Industrial and pre-diploma practice, diploma project

Specification of the basic module 4 “ Application of first-aid techniques, methods of protection in emergency situations ”

Scope of competence	
Module name	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	<ol style="list-style-type: none"> 1. To know the basic concepts, methods of first aid and methods of protection in emergency situations 2. To comply with safety regulations, fire safety and anti-terrorism security requirements. 3. To apply first aid techniques, methods of protection in emergency situations
Summary of content (sections, topics)	<ol style="list-style-type: none"> 1. Understanding of legal, regulatory, technical and organizational foundations of life safety in case of 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. Assessment of the risk of occurrence of hazards associated with violations of safety regulations, fire safety, anti-terrorism protection requirements and 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 in the need to use first aid

	<p>techniques</p> <p>8. The use of protection methods in conditions of danger to life and health, in emergency situations and in their professional activities</p> <p>9. The use of practical skills to ensure the safety of life and health in terms 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 credits/90 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, testing, presentation, report, message
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 5

“ Development and improvement of physical qualities ”

Scope of competence	
Module name	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	<ol style="list-style-type: none">1. To strengthen health and healthy lifestyle2. To improve physical qualities and psycho-physiological abilities3. To provide first aid for injuries and accidents.
Summary of content (sections, topics)	<ol style="list-style-type: none">1. Understanding and adhering to the fundamentals and culture of a healthy lifestyle2. Characteristics of the physiological basis of the respiratory, circulatory and energy supply systems under muscle loads3. Performing a set of exercises for general physical training4. Characteristics of the basics of physical activity and methods of its regulation5. Selection and application of methods and means of physical culture to improve the basic physical qualities6. Implementation of control standards and tests provided by the program7. Formation, deepening of knowledge and understanding in the need to use first aid techniques8. The use of protection methods in conditions of danger to life and health, in emergency situations and in their professional activities9. The use of practical skills to ensure the safety of life and health in terms of training exercises

	Subjects from disciplines: Labor protection and safety engineering
Prerequisites	Physical culture
Disciplines forming the module	Physical culture
Module type (mandatory, optional)	Mandatory
Labor intensity (credits / academic hours)	6 credits/180 hours
Duration of the module	3 semester
Form of training	Full –time
Technology of training	Modular
Forms of organization of the educational process. Teaching methods	Lecture, independent work, practical lesson. Verbal, visual, practical, control, self-control, testing, presentation, report, message
Forms of control	Pass fail exam, exam
Required resources	Gymnasium, sports equipment, safety regulations
Language of instruction	Russian, Kazakh
Post-requisites	PM 1- PM 11

Specification of the basic module 6 “ Understanding the history, role and place of Kazakhstan in the world community ”

Scope of competence	
Module name	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	<ol style="list-style-type: none"> 1. To list the main historical events 2. To establish causal relationships of historical events 3. To assess the achievements of an 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. Chronology of major historical events 4. Understanding the facts, processes and phenomena of historical events 5. Defining the 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 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 credits/120 hours
Duration of the module	3 semester
Form of training	Full –time
Technology of training	Modular
Forms of organization of the educational process. Teaching methods	Lecture, independent work, practical lesson. Verbal, visual, practical, control, self-control, testing, presentation, report, message, interview, essay, creative task, colloquium
Forms of control	Pass fail exam, exam
Required resources	Personal computer, software.
Language of instruction	Russian, Kazakh
Post-requisites	

Specification of the professional module 1 “Conducting preparatory work on the adoption of software for maintenance”

Scope of competence	Software Technical Support
Module name	Conducting preparatory work on the adoption of software for maintenance
Purpose of the module	After studying this module, the student will be able to conduct preparatory work on the adoption of software for maintenance
Level of professional qualifications	4
Learning outcomes by module	<ol style="list-style-type: none"> 1. To list the requirements and functionality of the accompanying software. 2. To choose standards, methods, tools, technical means for software maintenance work. 3. To apply standards, methodologies and software maintenance methods, pro-active software support technologies.
Summary of content (sections, topics)	<ol style="list-style-type: none"> 1. Characteristics of architectural models of modern computing systems 2. Defining of the device and operation of information systems 3. Characteristics of the principles of their interaction with the information system 4. Characteristic requirements and functionality of the accompanying software. 5. Defining the subject area 6. Description of business processes supported by the software. 7. Description of the basics of standardization 8. Characteristics of software maintenance methods 9. The use of pro-active support technology <p>Topics from the disciplines: Computer architecture, system software, application software</p>
Prerequisites	Computer science
Disciplines forming the module	Computer architecture, system software, application software
Module type (mandatory, optional)	Mandatory
Labor intensity (credits RK /	11 credits/330 hours

academic hours)	
Duration of the module	5 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
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 instruction	Russian, Kazakh
Post-requisites	Development of a set of documentation for maintenance

Specification of the professional module 2

“Development of a set of documentation for maintenance”

Scope of competence	Software Technical Support
Module name	Development of a set of documentation for maintenance
Purpose of the module	After studying this module, the student will be able to develop a set of documentation for support.
Level of professional qualifications	4
Learning outcomes by module	<ol style="list-style-type: none"> 1. To identify the subject area and business processes supported by the software. 2. To characterize the structure and functioning of information systems, and the principles of their interaction 3. To describe the life cycle and software development methodology.
Summary of content (sections, topics)	<ol style="list-style-type: none"> 1. Characteristics of the subject area 2. Description of business processes supported by software 3. Application of software development technology 4. Characteristic device information systems 5. Description of the functioning of information systems 6. Determining the principles of interaction of information systems 7. Description of the life cycle of an information system 8. Characteristics of information systems development methodology 9. Application of information systems development methodology <p>Topics from the disciplines: IT standardization, software development technology</p>
Prerequisites	Conducting of preparatory work on the adoption of software for maintenance
Disciplines forming the module	IT standardization, software development technology
Module type (mandatory, optional)	Mandatory

Labor intensity (credits / academic hours)	7 credits/210 hours
Duration of the module	5 - 6 semester
Form of training	Full –time
Technology of training	Modular
Forms of organization of the educational process.	Lecture, SRSP, practical lesson.
Teaching methods	Verbal, visual, practical
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, Bogomarkova G.I., 2015.
Language of instruction	Russian, Kazakh
Post-requisites	Definition of software technical support methods

Specification of the professional module 3
“Defining of software technical support methods”

Scope of competence	Software Technical Support
Module name	Defining of software technical support methods
Purpose of the module	After studying this module, the student will be able to determine the methods of software technical support.
Level of professional qualifications	4
Learning outcomes by module	<ol style="list-style-type: none"> 1. To apply methods of administration and monitoring of work, software settings. 2. To apply the functionality and methods of administration, configuration of the database, system and specialized software. 3. To customize the operation of the system software
Summary of content (sections, topics)	<ol style="list-style-type: none"> 1. Characteristics of administration methods 2. Monitoring the operation of software 3. Application of software tuning methods 4. Description of the principles of database administration 5. Configuring the database 6. Application of the functionality of specialized software 7. Description of system software configuration methods. 8. Application of software configuration methods 9. Characteristics of system software <p>Topics from the disciplines: System software, software development technology</p>
Prerequisites	Development of a set of documentation for maintenance
Disciplines forming the module	System software, software development technology
Module type (mandatory, optional)	Mandatory
Labor intensity (credits RK / academic hours)	8 credits /240 hours
Duration of the module	5-6 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
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	Use of software standards, methods and tools

Specification of the professional module 4 “Use of software standards, methods and tools”

Scope of competence	Software user support and analysis of software problems and changes
Module name	Use of software standards, methods and tools
Purpose of the module	After studying this module, the student will be able to use software standards, methods and tools.
Level of professional qualifications	4
Learning outcomes by module	1 To use software operating standards 2 To use in the work standards in the field of information security 3 To work with means of automating information processes (monitoring systems, Servis desk)
Summary of content (sections, topics)	1. Definition of standards in the field of software operation 2. Use of software standards 3. Maintenance of software in accordance with the standards 4. Description of standards in the field of information security 5. Determination of information security methods 6. Application of information security methods 7. Description of automation of information processes 8. Application of monitoring system 9. Work with automation Topics from the disciplines: Information security methods, application software, IT standardization
Prerequisites	Defining of software technical support methods
Disciplines forming the module	Information security methods, application software, IT standardization
Module type (mandatory, optional)	Mandatory
Labor intensity (credits RK /	10 credits /300 hours

academic hours)	
Duration of the module	5-6 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
Forms of control	Pass fail exam, exam
Required resources	Personal computer, software. “Computer architecture. Quantitative approach. Manual D. Patterson, J. Hennessy
Language of training	Russian, Kazakh
Post-requisites	Planning the installation and configuration of the accompanying software

Specification of the professional module 5

“Planning the installation and configuration of the accompanying software”

Scope of competence	Software technical support
Module name	Testing and troubleshooting of hardware and software
Purpose of the module	After studying this module, the trainee will be able to predict, identify, analyze and eliminate problems in the operation of the hardware-software complex of the accompanied software
Level of professional qualifications	4
Learning outcomes by module	<ol style="list-style-type: none"> 1. To plan the installation of the hardware-software complex and the accompanying software. 2. To manage information system hardware resources. 3. To install, update and configure the accompanying software.
Summary of content (sections, topics)	<ol style="list-style-type: none"> 1. Listing the software installation steps 2. Planning a software installation 3. Maintenance software 4. Characteristics of hardware resources 5. Hardware Resource Management 6. Installing hardware 7. Characterization of software update principles 8. Application of software configuration principles 9. Software Update <p>Topics from the disciplines: Parallel computing, system software</p>
Prerequisites	Use of software standards, methods and tools
Disciplines forming the module	Parallel computing, system software
Module type (mandatory, optional)	Mandatory
Labor intensity (credits RK / academic hours)	6 credits /180 hours
Duration of the module	5 – 6 semester
Form of training	Full –time
Technology of training	Modular

Forms of organization of the educational process. Teaching methods	Lecture, independent work, practical lesson.
Forms of control	Pass fail exam, exam
Required resources	PC, software. “Computer architecture. Quantitative approach”. Management D. Patterson, J. Hennessy
Language of instruction	Russian, Kazakh
Post-requisites	Forecasting, identifying, analyzing and eliminating problems in the development of hardware and software complex

Specification of the professional module 6

“Forecasting, identifying, analyzing and eliminating problems in the operation of the hardware-software complex and the accompanying software”

Scope of competence	Software Technical Support
Module name	Forecasting, identifying, analyzing and eliminating problems in the development of hardware and software complex
Purpose of the module	After studying this module, the student will be able to predict, identify, analyze and eliminate problems in the operation of the hardware and software complex accompanied by software.
Level of professional qualifications	4
Learning outcomes by module	<ol style="list-style-type: none"> 1. To monitor the operation of the software. 2. To comply with information security policies in the organization. 3. To assess and develop requirements for the hardware and software complex and the accompanying software, based on the prospects for their use
Summary of content (sections, topics)	<ol style="list-style-type: none"> 1. Description of software testing methods 2. Software Testing 3. Monitoring software performance 4. Characteristics of the basics of information security 5. Understanding Information Security Policy 6. Compliance with information security policy 7. Description of software requirements 8. Developing software requirements 9. Evaluation of the prospects for the use of software <p>Topics from the disciplines: Information security methods, software testing</p>
Prerequisites	Planning the installation and configuration of the accompanying software
Disciplines forming the module	Information security methods, software testing
Module type (mandatory,	Mandatory

optional)	
Labor intensity (credits / academic hours)	8 credits /240 hours
Duration of the module	5 - 6 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
Forms of control	Pass fail exam, exam
Required resources	Personal computer, software. “Computer architecture. Quantitative approach. Manual D. Patterson, J. Hennessy
Language of instruction	Russian, Kazakh
Post-requisites	Implementation of measures to improve the quality of information services for software maintenance

Specification of the professional module 7
"Implementation of measures to improve the quality of information services
for software maintenance"

Scope of competence	Software user support and analysis of software problems and changes
Module name	Implementation of measures to improve the quality of information services for software maintenance
Purpose of the module	After studying this module, the student will be able to implement measures to improve the quality of information services for software maintenance.
Level of professional qualifications	4
Learning outcomes by module	<ol style="list-style-type: none"> 1. To carry out activities for the maintenance of software in accordance with the developed catalog of information services 2. To organize work with users on frequently asked questions. 3. To develop activities to improve the quality of software maintenance services.
Summary of content (sections, topics)	<ol style="list-style-type: none"> 1. Characteristics of information resources and services 2. Characteristics of requirements and standards for information resources 3. Development of a catalog of information services 4. Creating a knowledge base structure on user issues 5. Creating a knowledge base 6. Modification of the knowledge base 7. Determining the quality of software maintenance services. 8. Development of a plan for improving the quality of software maintenance services 9. Implementation of measures to improve the quality of services <p>Topics from the disciplines: DBMS, information resources, software maintenance</p>
Prerequisites	Forecasting, identifying, analyzing and eliminating problems in the development of hardware and software complex

Disciplines forming the module	DBMS, information resources, software maintenance
Module type (mandatory, optional)	Mandatory
Labor intensity (credits / academic hours)	7 credits /210 hours
Duration of the module	5 - 6 semester
Form of training	Full-time
Technology of training	Module
Forms of organization of the educational process.	Lecture, independent work, practical lesson
Teaching methods	Verbal, visual, practical
Forms of control	Pass fail exam, exam
Required resources	Personal computer, software. Tanenbaum E. S. : "Modern operating systems." 4th ed. "Database systems. Full course " Weed D., Garcia-Molina G.
Language of training	Russian, Kazakh
Post-requisites	Development of documentation support for software operation

Specification of the professional module 8
“Standards, methods of software maintenance”

Scope of competence	Software user support and analysis of software problems and changes
Module name	Development of documentation support for software operation
Purpose of the module	After studying this module, the student will be able to develop documentation support and information services on software operation issues.
Level of professional qualifications	4
Learning outcomes by module	<ol style="list-style-type: none"> 1. To analyze software offers for software upgrades and modifications. 2. To develop documentation and information materials on software operation issues. 3. To manage the process of processing software user requests
Summary of content (sections, topics)	<ol style="list-style-type: none"> 1. Description of the principles of modernization and modification of software 2. Drafting proposals for software upgrades 3. The formulation of proposals for the modification of the software proposal 4. Characteristics of the principles of software operation 5. Understanding of software documentation 6. Development of information materials on the operation of software 7. Definition of principles for processing user requests 8. Processing user requests 9. Monitoring the processing of user requests <p>Topics from the disciplines: Application software, IT standardization, cloud computing, system software</p>
Prerequisites	Implementation of measures to improve the quality of information services for software maintenance
Disciplines forming the module	Application software, IT standardization, system software

Module type (mandatory, optional)	Mandatory
Labor intensity (credits / academic hours)	9 credits / 270 hours
Duration of the module	5 - 6 semester
Form of training	Full-time
Technology of training	Module
Forms of organization of the educational process.	Lecture, independent work, practical lesson
Teaching methods	Verbal, visual, practical
Forms of control	Pass fail exam, exam
Required resources	Personal computer, software. "Introduction to Database Systems" Deit K.D.
Language of training	Russian, Kazakh
Post-requisites	Analysis of problems in the protection of information

Specification of the professional module 9 “Analysis of problems in the protection of information”

Scope of competence	Support for software users and problem analysis and software changes
Module name	Analysis of problems in the protection of information
Purpose of the module	After studying this module, the trainee will be able to analyze the problems that arise when protecting information
Level of professional qualifications	4
Training outcomes by module	<ol style="list-style-type: none"> 1. To apply standards, methods and tools to maintain software 2. To use the concept of pro-active support of the organization. 3. To create information systems
Summary of content (sections, topics)	<ol style="list-style-type: none"> 1. Characteristics of standards in the field of software development 2. Troubleshooting of the system 3. Improvement of the design 4. Expanding the functionality of the software 5. Using software testing methods 6. Testing the software 7. Characteristics of database development methods 8. Creating a Database 9. Use of queries and software capabilities of DBMS
Prerequisites	Development of documentation support for software operation
Disciplines forming the module	Methods of information security, application software, software maintenance
Module type (mandatory, optional)	Mandatory
Labor intensity (credits RK / academic hours)	7 credits /210 hours
Duration of the module	6 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>Verbal, visual, practical</p>

Forms of control	Pass fail exam, exam
Required resources	Personal computer, software. “SQL Training”, A.Beuley, “Computer Security”, A.A. Zaika
Language of instruction	Russian, Kazakh
Post-requisites	Development of information material on the transfer of software

Specification of the professional module 10
“Development of information material on the transfer of software and organization of transfer of software”

Scope of competence	Transferring of the software to a new environment and removing the software from service
Module name	Development of information material on the transfer of software and organization of transfer of software
Purpose of the module	After studying this module, the trainee will be able to develop information material on the transfer of software and organization of the transfer of software
Level of professional qualifications	4
Learning outcomes by module	<ol style="list-style-type: none"> 1. To explain the essence of software migration 2. To analyze the requirements and limitations for migrating software to a new environment 3 To develop a model for migrating software to a new environment, agree on a migration plan and conduct migration work
Summary of content (sections, topics)	<ol style="list-style-type: none"> 1. Description of software migration options 2. Characteristics of the stages of software migration 3. Analysis of the stages of migration 4. Characteristics of software migration requirements 5. Description of limitations for software migration 6. Perform the requirements analysis 7. Development of a migration model 8. Alignment of the migration plan 9. Work on migration <p>Topics from the disciplines: Maintenance of software, cloud computing, system software</p>
Prerequisites	Analysis of problems in the protection of information
Disciplines forming the module	Software support, cloud computing, system software
Module type (mandatory, optional)	Mandatory

Labor intensity (credits / academic hours)	5 credits / 150 hours
Duration of the module	6 semester
Form of training	Full –time
Technology of training	Modular
Forms of organization of the educational process. Teaching methods	Lecture, independent work, practice.
Forms of control	Pass fail exam, exam
Required resources	Personal computer, software. “Reactive design patterns”, R. Kun
Language of instruction	Russian, Kazakh
Post-requisites	Development of instructions for decommissioning software

Specification of the professional module 11
“Development of instructions for decommissioning software”

Scope of competence	Moving software into a new environment and decommissioning software
Module name	Development of instructions for decommissioning software
Purpose of the module	After studying this module, the student will be able to develop instructions for decommissioning software.
Level of professional qualifications	4
Learning outcomes by module	1 To develop and agree on a software decommissioning plan. 2 To archive and decommission the hardware and software complex according to the plan 3 To ensure the use of historical data after the decommissioning of software.
Summary of content (sections, topics)	1. Testing the availability of software for decommissioning 2. Analysis of the availability of software for decommissioning 3. Develop a decommissioning plan 4. Description of archiving software 5. Preparation of decommissioning documentation 6. Archiving according to plan 7. Description of backup methods 8. Characterization of recovery methods 9. Making a backup Topics from the disciplines: Software maintenance, cloud computing system software, software testing
Prerequisites	Development of information material on software migration
Disciplines forming the module	Software maintenance, cloud computing system software, software testing
Module type (mandatory, optional)	Mandatory
Labor intensity (credits / academic hours)	6 credits / 180 hours
Duration of the module	6 semester
Form of training	Full –time
Technology of training	Modular

Forms of organization of the educational process.	Lecture, independent work, practice.
Teaching methods	Verbal, visual, practical
Forms of control	Pass fail exam, exam
Required resources	Personal computer, software. “Reactive design patterns”, R. Kun
Language of training	Russian, Kazakh
Post-requisites	Pre-diploma practice

EDUCATION PROCESS PLAN

Code and profile of education: 1300000 – Communication, telecommunications and information technology.

Electronic equipment

Specialty: 1304000 – “Computers and software”

Qualification: 1304134 – “Applied Bachelor for Software Support”

Full-time form of education

Normative period of study: 2 years 10 months based on the general secondary education

Index	Modules and types of training activities	Number of credits	Control form		Amount of study time (hours)						Distribution by courses
			Exam	Differentiated credit	Total hours	From them:					
						By types of training			On training organization forms		
						Theoretical training	Laboratory and practical works, course projects and works	Practical training **	Lecture, contact	SRO	
									SROP	SROS	

BM	Basic modules	30	3	8	900	630	270		720	180	60	1-6
BM 1	Application of professional vocabulary, the preparation of business papers in the field of professional activity	7	+	+	210	150	60		150	60	15	1-2
BM 2	Application of the basics of philosophical knowledge, social sciences for socialization and adaptation in society and the workforce	7		+	210	210			150	60	15	1-6
BM 3	Application of basic knowledge of economics in professional activities	3		+	90	60	30		60	30	15	1-4
BM 4	Application of first-aid techniques, methods of protection in emergency situations	3	+	+	90	90			60	30	15	1-4
BM 5	Development and improvement of physical qualities	6	+	+	180	-	180		180			1-6
BM 6	Understanding the history, role and place of Kazakhstan in the world community	4		+	120	120			120			1-2
PM	Professional modules on working qualifications	36			1080	600	240	240	600	480	120	1-6
PM 1	Conducting preparatory work on the adoption of software for maintenance	11	+	+	330	180	60	90	180	150	30	3-6
PM 2	Development of a set of documentation for maintenance	7	+	+	210	120	60	30	120	90	30	5-6
PM 3	Definition of software technical	8	+	+	240	150	60	30	150	90	30	3-6

	support methods											
PM 4	Use of software standards, methods and tools	10	+	+	300	150	60	90	150	150	30	3-6
PM	Professional modules of the mid-level specialist qualifications	21			630	300	240	90	300	330	180	1-6
PM 5	Planning the installation and configuration of the accompanying software	6	+	+	180	90	60	30	90	90	60	3-6
PM 6	Forecasting, identifying, analyzing and eliminating problems in the development of the hardware-software complex and the accompanying software	8	+	+	240	120	90	30	120	120	60	3-6
PM 7	Implementation of measures to improve the quality of information services for software maintenance.	7	+	+	210	90	90	30	90	120	60	3-6
PM	Professional modules of the applied bachelor	27			810	240	390	180	240	570	390	
PM 8	Development of documentation support for software operation	9	+	+	270	60	150	60	60	210	150	1-6
PM 9	Analysis of problems arising in the protection of information	7	+	+	210	60	90	60	60	150	90	1-6
PM 10	Development of information material on software transfer and organization of software transfer	5	+	+	150	60	60	30	60	90	60	1-6
PM 11	Development of instructions for decommissioning software	6	+	+	180	60	90	30	60	120	90	1-6

	Total:	114			3420	1770	1140	510	1860	1560	750	
PP	Professional practice (educational, industrial, pre-diploma)	42			1260			1260	180	1080	300	1-6
DP	Diploma project ***	9			270		270		60	210	30	6
IC	Intermediate certification	10			300	300			300		10	1-6
FE	Final examination	2			90	90			90			6
	Total for compulsory education:	180 (144 +36)			5400 (4320 +1080,)	2130	1410	1770	2460	2850	1080	
C	Consultations	10			300	300				300		1-6
O	Optional classes	11			330	330				330		1-6
	Total:	201 (165 +36)			6030 (4950 +1080)	2760	1410	1770	2460	3480	1080	

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 Educational Establishment of Teachers' Educational Institutions, 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.