

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

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

EDUCATION PROGRAM

1306000-Radioelectronics and communications

(code and name of the specialty)

Professional Qualification Level: mid-level specialist

Duration of training: 2 years 10 months.

Astana, 2018

The education 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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Authors-developers:

1. Nursultan T. Kayupov – Team Head of EP developers, expert on business service analysis on management of business information and knowledge about the customer “Kar-Tel” LLP;

2. Almagul A. Bralimova – Senior expert on business service analysis on management of business information and knowledge about the customer “Kar-Tel” LLP;

3. Iliyas B. Smagulov - leading specialist on business service analysis on management of business information and knowledge about the customer “Kar-Tel” LLP;

4. Moldir I. Kajupova – the laboratory expert of the 2nd category of RGP “Kazakhstan Institute of Metrology”.

5. Yesperdi N. Kozhabekov – a teacher of special disciplines of first category of the “College of energy and communications”.

Experts

1. Larisa A. Ostashova – a teacher of special disciplines of the second category of the “College of transport and communications”

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INTRODUCTION

The President of the country N.A.Nazarbayev in the message to the people of Kazakhstan 2018 stated: “It is necessary to develop modern standards in all major professions. In these standards, employers and businesspersons clearly consolidate what knowledge, skills and competences should have the employees. You need, based on the requirements of the professional standards, to develop new or update existing educational programs”.

This educational program is developed based on the basic normative documents defining the training content by specialty 0000000000 – “mobile communication systems”:

- State Compulsory Standard on technical and vocational education, approved by the Government of the Republic of Kazakhstan dated August 23, 2012 No. 1080 (with amendments as of August 15, 2017) ;
- National Qualifications framework, approved by the Protocol dated March 16, 2016;

A distinctive characteristic of this educational program is compliance with requirements of professional social order through the creation of generic and professional competences associated with essential practical activity.

Based on the present Education Program the education organization develops working programs and curricula, using appropriate methodological recommendations for the working educational and planning documentation.

The program is designed to implement the principles of democratic administration of education, expanding the boundaries of academic freedom and the authority of the educational institutions that will ensure the adaptation of the system of technical and vocational education to the changing needs of society, the economy and the labor market. The program flexibility will take into account the ability and needs of the individual, production and society.

The educational program includes the use of modular competence-based approach based on developing and evaluating competence of students of the educational institutions in the form of basic educational outcomes, use of a module training.

LIST OF DESIGNATIONS AND ABBREVIATIONS

AC	Academic Committee
BC	Basic competence
BM	Basic module
HE	Higher education
SCES	The State compulsory education standard
EQF	European qualification frame
ETF	The European Training Foundation
K&S	Knowledge and skills
NCO	National classifier of occupations
NQF	National Qualifications framework
NQS	National qualifications system
GHM	General Humanitarian Module
GCEA	General classifier of types of economic activity
GM	General module
EP	Education program
GVM	General Vocational Module
SQF	Sectorial Qualifications framework
PS	Professional standard
GE	Graduate education
PC	Professional competence
LP	Professional module
WG	The Working Group
RK	The Republic Of Kazakhstan
LO	Learning Outcome
SM	Special module
QMS	The quality management system
SEM	Socio-economic module
TVET	Technical and vocational education and training
TVET&PSE	Technical and Vocational Education and Post-Secondary Education
SSDD	Single System For Design Documentation
SSPD	Single System for Process Documentation
LC	The Labor Code

PASSPORT OF THE EDUCATIONAL PROGRAM

Name (*specialty code and name*): - 1306000 – “Radioelectronics and communications”

Qualification Name and Code: 1306123 – “Technician-radio technician”

Education program purpose: To prepare middle-level specialists that perform maintenance work on various types of radio-electronic equipment, including configuration, adjustment, testing and repair.

Level of education: technical and vocational

Professional qualification: Middle-level Specialist

Levels of qualifications for NQF/SQF: 4

Professional Area activity *:

Type (s) of employment:

Object (s) of professional activity:

Features of the Program**:** The possibility of using dual forms of vocational training, credit education system.

Form of study: full-time

Training dates: 2 years, 10 months.

Language of instruction Russian

The credits/hours volume: 165 credits/4960 hours

Requirements for students***:** persons with basic secondary education

*Specifies the parameters of the SQF (methodical recommendations on the development and design of sectorial qualification frameworks, Astana, 2016).

** Specifies according to PS (methodical recommendations on the design and execution of professional standards, Astana, 2017)

***Specifies the system objects (objects), phenomena, processes, and technology that aims activities.

****Specifies the dual education/distance training/credit technology

***** Specifies the previous education: basic secondary/secondary/technical and vocational education

Competency profile

Purpose of the training : works on technical maintenance of various kinds of radioelectronic equipment, including configuration, adjustment, testing and repair.		After the successful completion of the program , the trainee will be able to perform technical maintenance different types of radio-electronic equipment, including configuration, adjustment, testing and repair.
The name of the section, section, group, class and subclass according to GCEA* (professional standard):		Section: information and communication Section: (61) Group: (612) wireless telecommunication Class: (6120) wireless telecommunication
The scope of competencies (basic labor standard or professional functions analysis profession) **		
Basic competence		
Competency code	Competence (in line with labor functions)	Modules
BC 1	Apply of professional vocabulary to make business papers in the field of professional activity.	BM 1. Application 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 foundations of social sciences for socialization and adaptation in society and the work places	BM 3. Application of the foundations of social sciences for socialization and adaptation in society and the work places
BC 4	Read drawings	BM 4. Reading drawings
BC 5	Apply basic knowledge of economics in professional activities	BM 5. Application of basic knowledge of economics in professional activities
BC 6	Understand the history, role and place of Kazakhstan in the world community	BM 6. Understanding the history, role and place of Kazakhstan in the world community
BC 7	Apply digital devices and	BM 7. Application of digital

	microprocessor systems in communication technology	devices and microprocessor systems in communication technology
BC 8	Comply with safety regulations and labor protection rules	BM 8. Compliance with safety regulations and labor protection
Professional competence		
PC1	Perform the installation and dismantling of devices, appliances and radio-electronic equipment blocks.	PM 1. Mounting and dismounting devices, units and appliances, radio-electronic equipment.
PC 2	Set up and adjust device settings, units and appliances, radio-electronic equipment.	PM 2. Parameter setup and adjustment devices, blocks and radio-electronic devices technology
PC 3	Repair electronic equipment	PM 3. Repair of electronic equipment
PC 3	Diagnose of analog and digital devices and radio-electronic equipment blocks.	PM 4. Diagnosis of analog and digital devices and radio-electronic equipment blocks.
PC 5	Conduct tests of electronic equipment	PM 5. Conduction of tests of electronic equipment
PC 6	Check the status of the incoming of repair equipment	PM 6. Checking the status of incoming of repair equipment

* The general classification of economic activities (GCEA) is a document intended for classification and coding of all economic activities.

** A brief description of labor functions that allow you to achieve the main objectives of the specialty/profession. Number of functions depends on the complexity of the profession.

After the formulation of basic and professional competencies, one should begin to identify training outcomes for each of them. In addition, one competence can be associated with multiple training outcomes.

LIST OF MODULES AND LEARNING OUTCOMES

Module name	Learning outcomes (in accordance with the professional tasks)	Criteria for the assessment of learning outcomes	Disciplines forming the module
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BASIC MODULES

BM 1. BM 1. Application of professional vocabulary drafting of business papers in the field of professional activity.	LO 1. To know the grammar and terminology of the Kazakh (Russian) and foreign language for communication in the sphere of their professional activities.	1. Knowing of lexical and grammatical material in the specialty necessary for professional communication	Professional Kazakh (Russian) language Professional foreign language
		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 terms of multilingualism	
	LO 2. To know the translation technique (with a dictionary) of professionally-oriented texts.	1. Using dictionaries for translating texts	
		2. Application of specialty terminology in the state and other languages	
		3. Reading and translation (with a dictionary) texts of professional orientation.	
	LO 3. To demonstrate the ability for successful oral and written communication	1 Manifestation of the ability for successful oral and written communication in the state and other languages.	

	n in the state and other languages	<p>2. Application of communication skills to establish and develop relations of cooperation and partnership</p> <p>3. Use written and verbal communication to exchange information, establish and maintain business relationships</p>	
BM 2. 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 aid for injuries and accidents	1. Understanding the causes of injury during exercise	
		2. Using injury prevention methods	

		3. Providing medical care for injuries	
BM 3. Application of the foundations of social sciences for socialization and adaptation in society and the work place	LO 1. To know the basic concepts and information of philosophy, political science, cultural studies and sociology	1. Understanding the essence and essence of the concepts, categories and information of philosophy, political science, cultural studies and sociology	Basic Philosophy Cultural Studies Law basics Fundamentals of sociology and political science
		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	
	LO 2. To understand international political processes, the geopolitical situation and moral values, and the norms that form tolerance and an active personal stance.	1. Characteristics of the structure of the political system, history and the current state of the world and traditional religions	
		2. Determining differences in extremist, radical and terrorist ideologies	
		3. Tolerant perception of social, ethnic, religious and cultural differences	
	LO 3. To know concepts and information about the main branches of law	1. Knowledge of the basic provisions of criminal, civil and family law and information about taxes	
		2. Understanding of responsibility for administrative and corruption offenses	

		and respect for the principles of law and order	
		3. Protection of rights in accordance with the labor law	
BM 4. Reading drawings.	LO 1. To know the rules of design of SSDD	1. Knowledge of basic concepts of basic technological drawing.	Technical drawing
		2. Understanding of unified system design documentation	
		3. Formulation of design rules	
	LO 2. To issue SSPD in accordance with the main standards of SSDD	1. Determining the purpose of the scale. Drawing technical details	
		2. Possession of skills design SSPD.	
		3. Execution of drawings in accordance with the main standards SSDD	
	LO 3. To perform design on the plane.	1 Reading assembly drawings and circuit diagrams	
		2 Knowledge of design skills on the plane	
		3. Execution of schemes of drawings with projection on the plane.	
BM 5. Application of basic knowledge of Economics in professional activity	LO 1. To determine the forms and types of ownership, types of plans, basic economic indicators of enterprises	1. Understanding of the patterns and principles of market economy, tax policy, sources of inflation, milestones and content planning	Fundamentals of Economics
		2. The necessary economic calculations with the application of	

		<p>mathematical methods to determine basic economic indicators of enterprises</p> <p>3. Definition of basic economic indicators of enterprises</p>	
	LO 2. To understand trends in the world economy, the main tasks of the State transition to the “green” economy	<p>1. Development of trend characteristic in the world economy</p> <p>2. Understand the basic tasks of the State transition to the “green” economy</p> <p>3. Application of basic methods of calculating gross domestic product and gross national product to move States toward a green economy</p>	
	LO 3. To determine the possibility of success and business risk	<p>1. Characteristics of objectives, factors, conditions, organizational-legal forms of business activities</p> <p>2. Understanding of the factors determining the success of business activity</p> <p>3. Writing a business plan</p>	
BM 6. Understanding of the history, role and place of Kazakhstan in the world community	LO 1. To name the basic historical events	<p>1. Understanding historical events from antiquity to the present time</p> <p>2. Disclosure of the role and place of the Kazakh people in all-Turkish community, in the system of nomadic civilization, in the development of</p>	History of Kazakhstan

		historical and cultural community of peoples of the Eurasian world	
		3. Compiling the chronology of major historical events	
	LO 2. To establish cause-and-effect relationships of historical events	1. Understanding the facts, processes and phenomena of historical events	
		2. Definition of the basic facts, processes and phenomena, reflecting and describing the integrity and consistency of the history of Kazakhstan	
		3. Determination of cause-and-effect relationships of historical events	
	LO 3. To assess achievement of independent Kazakhstan	1. Understanding the essence and purpose of political and social developments in the Republic of Kazakhstan since independence obtaining	
		2. Characteristics of achievements of the independent Kazakhstan	
		3. Evaluation of the achievements of the independent Kazakhstan	
BM 7. Application	LO 1. To work with the information on the Internet	1. Understanding of the technical aspects of the use of the Internet and the notion of copyright	Computer technology
		2. Adherence to the principles of the	

of digital devices and microprocess or systems in communication technology		Internet community and the behavior code on the Internet		
		3. Determining the accuracy of the information		
	LO 2. To communicate in the Internet	1. Evaluation and analysis of sites		
		2. Managing social networking, avatar, and reputation in the network.		
		3. Getting information on the code of the digital world, the virtual world, on aggression on the Internet		
	LO 3. To implement digital consumption	1. Understanding of online advertising, online fraud		
		2. Understanding phishing, online games		
		3. Application of Internet-shops, signs of reliability, consumer rights		
	BM 10. Compliance with safety regulations and labor protection.	LO 1. To know basic concepts, techniques of first aid and emergency protection methods	1. Understanding of the legal, regulatory, technical and organizational foundations on safety in Emergency Situations	Occupational safety and health
			2. Master the fire and safety rules, rules of conduct, methods and means for the protection of people in an emergency (accident, catastrophe, disaster)	
3. Recognition of major natural and				

	technogenic hazards
LO 2. To follow the safety regulations, fire safety and security anti-terrorism requirements	1. Assessing the risk of hazards associated with violations of safety regulations, fire safety, requirements to ensure anti-terrorist protection and emergencies
	2. Mastering requirements to ensure fire safety during maintenance of telecommunication networks.
	3. Safety measures and precautions during maintenance of telecommunication networks.
LO 3. To apply first aid techniques, methods of protection in emergencies	1. Formation and deepening of knowledge and understanding of the need to use first aid techniques, methods of protection in situations of danger for life in emergency situations in their professional activities
	2. Consistent perception, evaluation, comparison and analysis of the information and use it for practical settlement of professional issues
	3. Application of practical skills for security in dangerous situations of everyday life and in emergency situations of different

		nature	
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PROFESSIONAL MODULES

PM 1 Assembly, erection and dismantling of devices, appliances and radio- electronic equipment blocks.	1. To prepare a diagram of the radio-electronic equipment	1. Describes the principle of the work of the circuit	Materials science, electrical radio- materials and radio components Life safety Technology installation for devices, blocks and radio- electronic devices technology Assembly technology for devices, blocks and radio- electronic devices technology Manufacturin g practice
		2. List of destination circuit elements	
		3. Create circuit outline for radio- electronic equipment	
	2. To apply instrumentation and Radio Assembly devices to assemble, erect and dismantle	1. Application of instrumentation and radio assembling devices with due regard to safety	
		2. Listing of assignments for used instrumentation and radio assembling devices	
		3. Selection of the standards and parameters of the circuit elements	
	3. To carry out of assembly, erection and dismantling of devices, appliances and units of radio- electronic equipment	1. Knowledge and master of mounting and dismounting methods	
		2. Carrying out assembly of installations, units and devices of radio- electronic equipment with due regard to safety	
		3. Carrying out mounting of devices, blocks and radio- electronic equipment devices with due regard to safety	
		4. Holding of	

		dismantling devices, units of radio-electronic equipment devices with due regard to safety	
PM 2 Parameter setup and adjustment of devices, units and blocks of radio-electronic equipment	1. To perform radio electrical calculations of various electrical and electronic circuits	1. Definition of the technical specifications and parameters of circuit elements	Methods of operation of the control and measuring equipment and technological equipment for assembly and installation Techniques for setting up and adjusting devices and blocks of radio-electronic equipment Manufacturing practice
		2. Application of mathematical formulas to perform calculations of radio electrical and electronic circuits	
		3. Calculation of technical parameters and characteristics of circuit elements for a specific kind of radio-electronic equipment with the use of fundamentals of radio engineering and telecommunications	
	2. To check the features and settings of the radio-electronic devices and appliances	1. Comparison of the verification results on technical characteristics and parameters of settlement data	
		2. Identification of the causes of the differences calculated data and test results	
		3. Exclusion of differences calculated data and test results	
3. To tweak and adjust of controls and blocks of radio electronic	1. Listing of appointments and principles of measuring		

	equipment according to specifications	instruments	
		2. Registration of the technical conditions and instructions on configured and adjustable radio-electronic equipment	
		3. Configuration and adjustment of the technical parameters and characteristics of circuit elements according to calculations	
PM 3 Repair of electronic equipment	1. To identify inoperable circuit elements	1. Enumeration of the principles of work of elements of the scheme	Materials, electrical and radio components Life safety Technology of installation of devices, units and devices of electronic equipment Internship
		2. Enumeration of parameters of circuit elements	
		3. Measurement of parameters of circuit elements	
		4. Comparison of the parameters of the elements of the list with the measurement results	
	2. To carry out repair work	1. Replacing unworkable circuit elements	
		2. Configuring inoperable circuit elements	
		3. Repair of inoperable circuit elements	
	3. To keep records of repaired electronic equipment	1. Accounting for replaced circuit elements	
		2. Considering the settings of unworkable circuit	

		elements	
		3. Accounting for repaired circuit elements	
PM 4 Diagnostics devices and blocks of radio-electronic equipment.	1. To monitor the parameters of the radio-electronic equipment during operation	1. Measuring of parameters for the radio-electronic equipment during operation	Theoretical basis of failure detection and diagnosis of defects of various kinds of radio-electronic equipment Theoretical bases of various kinds of repair of the radio-electronic equipment Manufacturing practice
		2. Reconciliation of the results of measurements of the radio-electronic equipment during operation with a list of technical parameters of the radio-electronic equipment	
		3. Configure the settings of the radio-electronic equipment according to the list of technical parameters	
	2. To apply software tools while diagnosing the radio-electronic equipment	1. Transfer of software tools for the diagnosis of the radio-electronic equipment	
		2. Mastering of a personal computer	
		3. Determination of the parameters and characteristics of the radio-electronic equipment with the help of software tools	
	3. To make the diagnostic algorithms for the radio-electronic	1. Identification of diagnostic appointments	
		2. Transfer procedures in the	

	equipment	diagnosis of the radio-electronic equipment	
		3. The definition of diagnostic results	
PM 5 Tests of electronic equipment	1. To determine the methodology for testing electronic equipment	1. Tests of radio-electronic equipment in the order of conducting, determined by technical documentation	Methods for testing electronic equipment Basics of Radio Engineering Methods and means of testing electrical measuring instruments Methods and technologies for testing radio-electronic equipment Practice
		2. Determination of individual characteristics of electronic equipment	
		3. Tests on the nature of external influences on electronic equipment	
	2. To identify the causes of failure of electronic equipment during testing	1. Verifying the performance of each circuit element	
		2. Verification of parameters and characteristics of a radio device	
		3. Identify the causes of failure of electronic equipment	
	3. To make conclusions on the test results	1. Enumeration of requirements for parameters of electronic equipment	
		2. Determination of the working conditions of electronic equipment	
		3. Evaluation of the performance of electronic equipment	
PM 6	1. To check the condition of the	1. Verification of the performance of	Fundamentals of circuit

Verifying condition of returned from repair electronic equipment	incoming of repair equipment	radio-electronic equipment	engineering in telecommunications Theory of telecommunications Theory of electrical circuits in telecommunications Technical control means for radio equipment, perspectives and directions of their improvement Manufacturing practice
		2. Measurement of elements parameters in the circuit	
		3. Verification of the results with data from the technical documentation of the radio-electronic equipment	
	2. To keep records and analysis of indicators use of radio-electronic equipment	1. Verification of compliance with the rules of technical operation and care for electronic equipment	
		2. Identification of installation or dismantling electronic equipment circuits	
		3. Identification of the replacement circuit elements radio-electronic equipment	
	3. To evaluate the technical condition of the electronic equipment	1. Determination of the wear level of radio-electronic equipment	
		2. Forecasting future service life of radio-electronic equipment	
		3. Recommendation for further exploitation of the radio-electronic equipment	

Specification for basic module 1.

“Application of professional vocabulary, the preparation of business papers in the field of professional activity”

Scope of competence	
Title and code of the module	Showing the ability for successful and positive business communication in the state and other languages.
Purpose of the module	After studying this module, the trainee will be able to apply professional vocabulary in the field of professional activity.
Level of professional qualification	4
Learning outcomes by module	<ol style="list-style-type: none"> 1. To know the grammar and terminology of the Kazakh (Russian) and foreign language for communication in the sphere of their professional activities. 2. To possess the translation technique (with a dictionary) of professionally-oriented texts. 3. To demonstrate the ability for successful oral and written communication in the state and other languages.
A summary of the content (sections, themes)	<p>Topics from the disciplines</p> <ol style="list-style-type: none"> 1. 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 terms of multilingualism. 4. Using dictionaries for translating texts 5. Application of terminology in the specialty in the state and other languages. 6. Reading and translating (with a dictionary) texts of professional orientation. 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 communication 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.
Module type (mandatory, optional)	Mandatory
Labor intensity (credits / academic hours)	5 credits/150 hours
Duration of the module	
Form of teaching	Full-time
Education technology	Modular
Form of organization of educational process	Lecture, independent work, practical classes, lab, practice
Teaching methods.	Oral interaction, testing, presentation, report, post, interviews, essays, creative task, colloquium, project work, case study
Forms control	Pass fail exam, exam
Required resources	Personal computer, software. Interactive whiteboard.
Language of instruction	Russian, Kazakh
Post-requisites	

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

Scope of competence	Basic module
Title and code of the module	Development and improvement of physical qualities
The purpose of the module	After studying this module, the trainee will be able to Develop and improve physical qualities.
Level of professional qualification	5
Learning outcomes by module	<ol style="list-style-type: none"> 1. To strengthen health and abide by the principles of a healthy lifestyle. 2. To improve physical qualities and psycho-physiological abilities. 3. To provide first medical aid in case of injuries and non-frequent cases.
A summary of the content (sections, themes)	<p>Topics from the disciplines</p> <ol style="list-style-type: none"> 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 eight. . The use of methods of injury prevention. 9. Providing medical care for injuries.
Prerequisites	Physical education
Disciplines forming the module	Physical education
Module type (mandatory, optional)	Mandatory
Labor intensity (credits RK/ academic hours)	6 credits / 180 hours

Duration of the module	
Form of teaching	Full-time
Education technology	Modular
Form of organization of educational process	Lecture, independent work, practical lessons
Teaching methods	Oral interaction, testing, presentation, report, post, interviews, essays, creative task, colloquium, project work, case study
Forms control	Pass fail exam, exam
Required resources	Personal computer, software. Interactive board. TV. Audio-video equipment. Sports equipment, trainers and equipment. Library Fund. Kydyrmoldina A. Dene, turbis_ men sport tyrleriniң physiologyq negizderi: oqulyq azastan Respublikasyny Bilim zhyne rylym ministerlili. Almaty 2014 Mұhamedzhanova Ұ. Dene shynyqtyru pәninen oqytu әdistemesi. Oқи қғrali. Astana. Folio. 2011 Dene shynyqtyru dayyndyғyny ң presidenttik tetiler- Kazakstan Respubliki khalkyn saуqtyrudуң negizi. Ідіstemelik oқу құралы. Astana 2014 Zheleznyak Yu.D. Theory and methods of sports games. 2014 Lyakh, Zdanevich. Physical culture 10-11 class 2012g.
Language of instruction	Russian, Kazakh
Post-requisites	

Specification for basic module 3
"Application of the foundations of social sciences for socialization and adaptation in society and the workforce"

Scope of competence	Basic module
Title and code of the module	Application of the foundations of the social sciences for socialization and adaptation in society and the workforce.
Purpose of the module	After studying this module, the trainee will be able to apply the fundamentals of the social sciences for socialization and adaptation in society and the workforce.
Level of professional qualification	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 the international political processes, the geopolitical situation and moral values and norms that form tolerance and an active personal position. 3. To know the basic concepts and information about the main branches of law.
A summary of the content (sections, themes)	<p>Topics from the disciplines</p> <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. 4. Characteristics of the structure of the political system, history and the current state of world and traditional religions. 5. Definition of differences extremist, radical and terrorist ideologies. 6. Tolerant perception of social, ethnic, confessional and cultural differences. 7. Possession of the basic provisions of criminal, civil and family law and information about taxes. 8. Understanding of responsibility for administrative and corruption offenses and

	observance of the principles of law and order. 9. Protecting your rights in accordance with labor laws.
Prerequisites	History of Kazakhstan
Disciplines forming the module	Basic philosophy Culturology The basis of the economy. Basis of law Fundamentals of sociology and political science
Module type (mandatory, optional)	Mandatory
Labor intensity (credits / academic hours)	4 credits / 120 hours
Duration of the module	Semester
Form of teaching	Full-time
Education technology	Modular
form of organization of educational process. Teaching methods.	Lecture, independent work, practical lessons Oral interaction, testing, presentation, report, post, interviews, essays, creative task, colloquium, project work, case study
Forms control	Pass fail exam
Required resources	Personal computer, software. Interactive board. Electronic textbook. Sybanbaev K.U. Philosophy. Almaty: Economy 2013. Kishibekov D. Philosophy. Almaty: Karasai 2011. Razdykov S.Z. Basics of political science. Textbook. Astana: Folio 2012 Rakhimbaeva A.S. Basics of political science. Course of the lecture. A.Foliant 2012. E-book, Political Science: Summaries, Lectures, author: Mukhaev RT, Zaitsev A.V. M., 2004. Karakuzova Zh.K. Culturology: A: Tome 2014 Kairbekov B.G. National customs and traditions. A: Empire.KZ.2012y. Video: http://www.ata-mura.kz
Language of instruction	Russian, Kazakh
Post-requisites	

Specification for basic module 4
“Reading drawings”

Scope of competence	Basic module
Title and code of the module	"Reading drawings"
Purpose of the module	After studying this module, the trainee will be able to read the drawings.
Level of professional qualification	4
Learning outcomes by module	<ol style="list-style-type: none"> 1. To know the rules of design SSPD. 2. To issue SSPD in accordance with the main standards of SSDD. 3. Perform design on the plane.
A summary of the content (sections, themes)	<p>Topics from the disciplines</p> <ol style="list-style-type: none"> 1. Basic concepts of basic technological drawing. 2. Understanding of a unified design documentation system. 3. Formulation of the rules of registration. 4. Determine the purpose of the scale of the implementation of drawing technical details 5. Possession of skills design SSDD. 6. Execution of drawings in accordance with the main standards SSPD. 7. Reading assembly drawings and circuit diagrams. 8. Possession of design skills on the plane. 9. Execution of drawings with projection on the plane.
Prerequisites	
Disciplines forming the module	Technical drawing
Module type (mandatory, optional)	Mandatory
Labor intensity (credits / academic hours)	2 credits/60 hours
Duration of the module	Semester
Form of teaching	Full-time
Education technology	Modular
Form of organization of educational process	Lecture, independent work, practical lessons
Teaching methods	Oral interaction, testing, presentation, report, post, interviews, essays, creative task, colloquium. project work, case-task
Forms control	Pass fail exam, exam

Required resources	Personal computer, software. Interactive whiteboard. Electronic textbook. Bogolyubov S.K. "Drawing" Moscow 1989. Saparov V.E. Maksimov N.A. "System of standards in telecommunications and electronics" Moscow 1985. SSPD "Symbols conditional graphically in schemes" Moscow, 1985. State Standards Moscow, 1986 Volume 1,2,3. Baranov B.S. "Fundamentals of drawing" Moscow, 1985. Mironov R.S., Mironov B.G. "Collection of tasks for drawing" Moscow, 1984. Egorov S.A. "Drawing and Drawing" Moscow, 1985. Simonenko V.D. "Textbook for drawing 9 cl." Moscow, 2007. Kuprikov M.Y., Markhina L.P. "Line of CMB in drawing" ed. Drofa 2008 Yakovlev G.N. "Geometry" Moscow, 1987
Language of instruction	Russian, Kazakh
Post-requisites	

Specification for Professional Module 5
“Application of basic knowledge of economics in professional activities”

Scope of competence	Basic module
Title and code of the module	Application of basic knowledge of economics in professional activities
Purpose of the module	After studying this module, the trainee will be able to apply the basic knowledge of the economy in professional activities.
Level of professional qualification	4
Learning outcomes by module	<ol style="list-style-type: none"> 1. To determine the forms and types of property, types of plans, basic economic indicators of the enterprise. 2. To understand the development trends of the world economy, the main objectives of the state’s transition to a green economy. 3. To determine the possibility of success and risk business.
A summary of the content (sections, themes)	<p>Topics from the disciplines</p> <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. Perform the 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 trends in the global economy. 5. Understanding the main objectives of the transition of the state to a "green" economy. 6. Application of the main 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 entrepreneurial activity. 8. Understanding the factors that determine the success of business activities. 9. Drawing up a business plan
Prerequisites	Basics of Economics
Disciplines forming the	Economics of communication enterprises and

module	fundamentals of entrepreneurial activity.
Module type (mandatory, optional)	Mandatory
Labor intensity (credits / academic hours)	2 credits / 60 hours
Duration of the module	Semester
Form of teaching	Full-time
Education technology	Modular
Form of organization of educational process	Lecture, independent work, practical lessons
Teaching methods	Oral interaction, testing, presentation, report, post, interviews, essays, creative task, colloquium, project work, case study
Forms control	Pass fail exam
Required resources	Personal computer, software. Interactive whiteboard. Electronic textbook. Gabit J.H.H. Microeconomics- Astana, Foliant, 2012. Bekmoldin S.K. Economic Theory-Astana, Foliant, 2012. Chayzhunusova G.ZH. Basics of Economics. Astana, Foliant 2011y. Shulenbaeva S. Workshop on the basics of a market economy, Foliant, 2011. Khamitova G. Economics and fundamentals of entrepreneurship, Foliant, 2011. Bekbolsynova A. Taxes and taxation, Foliant, 2014. Nurpeys E. Basics of Macroeconomics, Foliant, 2011. Khojanियazov Zh. T. Basics of a Market Economy, Foliant, 2011
Language of instruction	Russian, Kazakh
Post-requisites	

Specification for Professional Module 6
“Understanding the history, role and place of Kazakhstan in the world community”

Scope of competence	Basic module
Title and code of the module	Understanding of the history, role and place of Kazakhstan in the world community.
Purpose of the module	After studying this module, the trainee will be able to Understand the history, role and place of Kazakhstan in the world community.
Level of professional qualification	4
Learning outcomes by module	<ol style="list-style-type: none"> 1. To name the main historical events. 2. To establish causal relationships of historical events. 3. To assess the achievements of independent Kazakhstan.
A summary of the content (sections, themes)	<p>Topics from the disciplines</p> <ol style="list-style-type: none"> 1. Understanding the essence of historical events that took place 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 the 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. Determination of 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 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.

Prerequisites	History of Kazakhstan
Disciplines forming the module	History of Kazakhstan
Module type (mandatory, optional)	Mandatory
Labor intensity (credits / academic hours)	3 credits / 90 hours
Duration of the module	Semester
Form of teaching	Full-time
Education technology	Modular
Form of organization of educational process Teaching methods	Lecture, independent work, practical lessons Oral interaction, testing, presentation, report, post, interviews, essays, creative task, colloquium. project work, case study
Forms control	Pass fail exam, exam
Required resources	Personal computer, software. Interactive whiteboard. Electronic textbook. Z.O. Artykbaev 12 lectures on the history of Kazakhstan. Foliant 2013. Zholdasbayev S. History of Kazakhstan of the Middle Ages. Textbook, 2nd ed., Revised- Almaty: Atamura 2012 Turmanova B.K. Bermanova S.T. History of Kazakhstan. Tutorial. A: Foliant 2013. Kasymbaev Zh.K. History of Kazakhstan (XVIIIv-1914) Textbook. Almaty: Mektep, 2012. Kabuldinov Z.E., Kayipbaeva A.T. History of Kazakhstan (XVIIIv-1914) Textbook for grade 8 of secondary school. 2nd ed., Pererab. Almaty: Atamura, 2012. R. Sausenova. History of Kazakhstan. Almaty: Mektep, 2011. Igibaev S. History of Kazakhstan in sources and materials. Astana: Foliant 2013.
Language of instruction	Russian, Kazakh
Post-requisites	Culturology, Fundamentals of Sociology and Political Science.

Specification of basic module 7
“Application of digital devices and microprocessor systems in communication technology”

Scope of competence	Basic module
Title and code of the module	Application of digital devices and microprocessor systems in communication technology
Purpose of the module	After studying this module, the trainee will be able to use digital devices and microprocessor systems in communication technology.
Level of professional qualification	4
Learning outcomes by module	<ol style="list-style-type: none"> 1. To determine the principle of construction and operation of digital devices and microprocessor systems. 2. To distinguish the principle of operation of a typical microprocessor and microcontroller. 3. To synthesize combinational and sequential digital.
A summary of the content (sections, themes)	<p>Topics from the disciplines</p> <ol style="list-style-type: none"> 1. Understanding the basics of universal software packages 2. Implementation of computer simulation of digital devices using programs 3. The formulation of logical elements and functions in different standards 4. The definition of the principle of operation of the structure, the main combinational digital devices 5. Possession of technical characteristics, design features and purpose of electrical equipment 6. Assembly of semiconductor diodes and other electronics elements, separate blocks of digital devices 7. Determination of the possibility of microprocessor tools in solving problems of controlling the operation of station equipment of electronic exchanges of various systems. 8. The use of information technology in solving production problems. 9. Execution of special computer programs for working with external devices of electronic PBX.
Prerequisites	Basics of Informatics, Physics, Chemistry,

	Mathematics.
Disciplines forming the module	Computer science. Digital devices and microprocessor systems.
Module type (mandatory, optional)	Mandatory
Labor intensity (credits / academic hours)	1 credits / 30 hours
Duration of the module	semester
Form of teaching	Full-time
Education technology	Modular
Form of organization of educational process Teaching methods	Lecture, independent work, practical classes. Oral interview, testing, presentation, report, post, interviews, essays, creative task, colloquium, project work, case study
Forms control	Pass fail exam
Required resources	Personal computer, software. Interactive whiteboard. Electronic textbook. Computer programs. Goldenberg L.M. and others. Digital devices and microprocessor systems. Tasks and exercises: Proc. manual for universities. L.M. Goldenberg, V.A. Malev, G.B. Malko- M: Radio and Communication, 1992. Kalabekov BA Digital devices and microprocessor systems. M: Hotline-Telecom, 2000. O.N. Lebedev. Memory chips and their application.-M: Radio and communication, 1990. Logic IC KR1533, KR15554: Reference book / Petrovsky I.I., Pribylsky AV, Troyan AA, Chuvelev V.S.- M: TOO " BINOM ", 1993. Opadchiy Yu.F., Gludkin O.P, Gurov A.I. Analog and digital electronics.- M: Hot Line-Telecom, 1999. Ugryumov E.P. Digital circuit technology.- SPb: BHV- St. Petersburg, 2000. Usatenko S.T., Kachenyuk T.K, Terekhova N.V. Execution of electrical circuits for ESKD.-M: Publishing house of standards, 1989. Nsanov M.A. Digital devices and microprocessor systems. Astana: Foliant, 2010.
Language of instruction	Russian, Kazakh
Post-requisites	Digital and fiber optic transmission systems, Digital switching systems, Communication networks and switching systems.

Specification of basic module 8
“Compliance with safety regulations and labour protection”

Scope of competence	Basic module
Title and code of the module	Compliance with safety regulations and labor protection.
Purpose of the module	After studying this module, the trainee will be able to follow the rules of safety and labour protection.
Level of professional qualification	4
Learning outcomes by module	<ol style="list-style-type: none"> 1. To comply with the principle of priority of preserving human health and safety during the labor process. 2. To comply with safety regulations, electrical safety and fire safety. 3. To apply first aid techniques, methods of protection in emergency situations.
A summary of the content (sections, themes)	<p>Topics from the disciplines:</p> <ol style="list-style-type: none"> 1. Legal regulations in the field of occupational safety and health. 2. Ensuring the safety of the workplace. 3. Compliance with the requirements of industrial sanitation. 4. Assessment of the risk of hazards associated with violations of safety regulations, electrical safety and fire safety. 5. Provision of materials, equipment, equipment and fire extinguishing equipment when servicing telecommunications networks. 6.. Compliance with safety precautions and precautions when performing maintenance of telecommunications networks. 7. Consistent perception, evaluation, comparison and analysis of information and its use for the practical solution of professional tasks 8. Demonstration of first-aid techniques, methods of protection in the face of danger to life in emergency situations in their professional activities. 9. The use of practical skills to ensure safety in dangerous situations of everyday life and in emergency situations of different nature
Prerequisites	Physics, chemistry .

Disciplines forming the module	Occupational Safety and prevention of accidents. Production training. Professional practice.
Module type (mandatory, optional)	Mandatory
Labor intensity (credits / academic hours)	1 credits / 30 hours
Duration of the module	semester
Form of teaching	Full-time
Education technology	Modular
Form of organization of educational process Teaching methods	Lecture, independent work, practical. Oral interview, testing, presentation, report, post, interviews, essays, creative task, colloquium, project work, case study
Forms control	Pass fail exam
The necessary resources	Personal computer, software. Interactive whiteboard. Electronic textbook. Kukin P.P., Lapin V.L., Ponomarev N.L., Serdyuk N.I. Life Safety. Safety of technological processes and production (OT). M: Graduate School 2002. Baklashov N.I., Kitaeva N.ZH., Terekhov B.D. Labor protection at communication enterprises and environmental protection.- M: Radio and communication. 1989 Labor protection in electrical installations. Under. ed. B.A. Knyazevsky. M: 1981 Labour protection rules when working on the wired broadcast stations.
Language of instruction	Russian, Kazakh
Post-requisites	Technological practice, pre-diploma practice.

Specification of professional module 1
“Assembly, installation and disassembly of devices, units and devices of electronic equipment”

Scope of competence	Assembly, installation and dismantling of electronic equipment.
Title and code of the module	Assembly, installation and dismantling of electronic equipment.
Purpose of the module	After studying this module, the student will be able to perform the installation and disassembly of devices, units and devices of radio-electronic equipment.
Level of professional qualification	4
Learning outcomes by module	<ol style="list-style-type: none"> 1. To plan the scheme of electronic equipment 2. To use instrumentation for assembly, installation and dismantling 3. To apply radio assembly devices for assembly, installation and dismantling 4. To carry out the assembly, installation and disassembly of devices, units and devices of electronic equipment
A summary of the content (sections, themes)	<ol style="list-style-type: none"> 1. Description of the principle of operation of the scheme 2. Enumerate the purpose of the schema elements 3. Creating an outline of the scheme of electronic equipment 4. Use of instrumentation and radio wiring devices in compliance with safety regulations 5. Listing of assignments used by instrumentation and radio assembly devices. 6. Selection of characteristics and parameters of circuit elements 7. Possession of assembly and disassembly techniques 8. Assembly of devices, units and devices of radio-electronic equipment in compliance with safety regulations. 9. Installation of devices, units and devices of radio-electronic equipment in compliance with safety regulations 10. Carrying out the dismantling of devices, units and devices of electronic equipment in compliance with safety regulations

Prerequisites	Physics, Mathematics, Geometry, Computer Science
Disciplines forming the module	Materials, electrical and radio components Life safety Technology of installation of devices, units and devices of electronic equipment The technology of assembling devices, units and devices of electronic equipment Internship
Module type (mandatory, optional)	Mandatory
Labor intensity (credits / academic hours)	11 credits / 330 hours
Duration of the module	
Form of teaching	Full-time
Education technology	Modular
Form of organization of educational process Teaching methods	Lecture, individual work, practical, laboratory work, practice. Oral interaction, testing, presentation, report, post, interviews, essays, creative task, colloquium, project work, case study
Forms control	Pass fail exam, exam
Required resources	Personal computer, software, radio installation equipment: assembly soldering station, dismantling soldering station, radio installation tools, lamp, soldering iron, radio elements, oscilloscope, multimeter, smoke traps, tips for a soldering iron, etc. Training manuals: Yarochnikina G.V. "Electronic equipment and instruments"; N. A. Olifirenko, I. V. Ovchinnikova, T. N. Khlystunova - "Assembly, installation, adjustment and repair of electrical equipment"; Arzamasov V.B., Volchkov A.N., Golovin V.A. - "Materials science and technology of construction materials;
Language of instruction	Russian, Kazakh
Post-requisites	Organization of work on the assembly, installation and dismantling of electronic equipment.

Specification of professional module 2
**“Setting and adjustment of parameters of devices, units and devices of radio-
 electronic equipment”**

Scope of competence	Tuning and adjustment of devices, units and devices of radio-electronic equipment
Title and code of the module	Setting and adjustment of devices, units and devices of radio-electronic equipment
Purpose of the module	After studying this module, the student will be able to configure and adjust the parameters of devices, units and devices of electronic equipment
Level of professional qualification	4
Learning outcomes by module	<ol style="list-style-type: none"> 1. To perform radio calculations of various electrical and electronic circuits 2. To verify the characteristics and settings of instruments and devices of electronic equipment 3. To adjust and adjust the devices and blocks of electronic equipment in accordance with the specifications
A summary of the content (sections, themes)	<ol style="list-style-type: none"> 1. Determination of technical characteristics and parameters of circuit elements 2. The use of mathematical formulas for performing radio engineering calculations of electrical and electronic circuits 3. Calculation of technical parameters and characteristics of circuit elements for a certain type of electronic equipment using the basics of radio engineering and telecommunications 4. Comparison of the results of the verification of technical characteristics and parameters with the calculated data 5. Identifying the causes of differences in the calculated data and test results 6. Exclusion of differences in calculated data and test results 7. Enumeration of the purposes and principles of measuring instruments 8. Consideration of technical conditions and instructions for tunable and adjustable electronic equipment 9. Adjustment and adjustment of technical parameters and characteristics of circuit elements

	according to calculations
Prerequisites	Physics, Mathematics, Geometry, Computer Science
Disciplines forming the module	Methods of operation of instrumentation and technological equipment assembly and installation Methods of setting and adjusting devices and blocks of electronic devices Internship
Module type (mandatory, optional)	Mandatory
Labor intensity (credits RK/ academic hours)	7 credits / 210 hours
Duration of the module	
Form of teaching	Full-time
Education technology	Modular
Form of organization of educational process. Teaching methods.	Lecture, independent work, practical, laboratory work. Oral interaction, testing, presentation, report, post, interviews, essays, creative task, colloquium, project work, case study
Forms control	Pass fail exam, exam
Required resources	Personal computer, software, radio installation equipment: assembly soldering station, dismantling soldering station, radio installation tools, lamp, soldering iron, radio elements, oscilloscope, multimeter, smoke traps, tips for a soldering iron, etc. Training manuals: Yarochkina G.V. "Electronic equipment and instruments"; N. A. Olifirenko, I. V. Ovchinnikova, T. N. Khlystunova - "Assembly, installation, adjustment and repair of electrical equipment";
Language of instruction	Russian, Kazakh
Post-requisites	Organization of work on setting up and adjusting devices, units and devices of electronic equipment

Specification of professional module 3
“Repair of electronic equipment”

Scope of competence	Diagnostics and repair of electronic equipment.
Title and code of the module	Repair of electronic equipment
Purpose of the module	After studying this module, the student will be able to perform repair of electronic equipment.
Level of professional qualification	4
Learning outcomes by module	<ol style="list-style-type: none"> 1. To identify inoperable circuit elements 2. To carry out repair work 3. To keep records of repaired electronic equipment
A summary of the content (sections, themes)	<ol style="list-style-type: none"> 1. Enumeration of the principles of work of elements of the scheme 2. Enumeration of parameters of circuit elements 3. Measurement of parameters of circuit elements 4. Comparison of the parameters of the elements of the list with the measurement results 5. Replacing unworkable circuit elements 6. Configuring inoperable circuit elements 7. Repair of inoperable circuit elements 8. Accounting for replaced circuit elements 9. Considering the settings of inoperable circuit elements 10. Accounting for repaired circuit elements
Prerequisites	Physics, Mathematics, Geometry, Computer Science
Disciplines forming the module	Materials, electrical and radio components Life safety Technology of installation of devices, units and devices of electronic equipment Internship
Module type (mandatory, optional)	Mandatory
Labor intensity (credits / academic hours)	9 credits /270 hours
Duration of the module	
Form of teaching	Full-time
Education technology	Modular
Form of organization of educational process	Lecture, independent work, practical lesson, lab.

Teaching methods	Oral interaction, testing, presentation, report, post, interviews, essays, creative task, colloquium. project work, case-task
Forms control	Pass fail exam, exam
Required resources	Personal computer, software, radio installation equipment: assembly soldering station, dismantling soldering station, radio installation tools, lamp, soldering iron, radio elements, oscilloscope, multimeter, smoke traps, tips for a soldering iron, etc. Training manuals: Izyumov N. M. Linde D. P. - "Fundamentals of Radio Engineering", Zyryanov Yu.T., Belousov O. A., Fedyunin P. A. - "Fundamentals of Radio Systems"; V. V. Petrov - "Adjustment, diagnostics and monitoring of the operability of assembled nodes, blocks and devices of radioelectronic equipment, equipment of wire communication, elements of nodes of impulse and computer equipment"; Davidson, G.L. - "Troubleshooting and repair of electronic equipment"
Language of instruction	Russian, Kazakh
Post-requisites	Organization of work on the repair of electronic equipment.

Specification of basic module 4
“Diagnostics of devices and blocks of radio-electronic equipment”

Scope of competence	Diagnostics and repair of electronic equipment.
Title and code of the module	Diagnostics of devices and blocks of radio-electronic equipment
Purpose of the module	After studying this module, the student will be able to perform diagnostics of devices and blocks of electronic equipment.
Level of professional qualification	4
Learning outcomes by module	<ol style="list-style-type: none"> 1. To control the parameters of electronic equipment in the process of operation 2. To use software when conducting diagnostics of electronic equipment 3. To create diagnostic algorithms for electronic equipment
A summary of the content (sections, themes)	<ol style="list-style-type: none"> 1. Measurement of parameters of radio-electronic equipment during operation 2. Verification of the results of measurements of parameters of radio-electronic equipment in the process of operation with a list of technical parameters of radio-electronic equipment 3. Setting parameters of electronic equipment in accordance with the list of technical parameters 4. Enumeration of software for diagnostics of radio-electronic equipment 5. Possession of a personal computer 6. Determination of parameters and characteristics of radio-electronic equipment using software 7. Definition of diagnostic purpose 8. Listing the procedure in the diagnosis of electronic equipment 9. Determination of diagnostic results
Prerequisites	Physics, Mathematics, Geometry, Computer Science
Disciplines forming the module	<p>Theoretical bases of diagnostics of detection of failures and defects of various types of electronic equipment</p> <p>The theoretical basis for the repair of various types of electronic equipment</p> <p>Internship.</p>
Module type (mandatory,	Mandatory

optional)	
Labor intensity (credits / academic hours)	6 credits /180 hours
Duration of the module	
Form of teaching	Full-time
Education technology	Modular
Form of organization of educational process. Teaching methods.	Lecture, independent work, practical lessons, laboratory work. Oral interaction, testing, presentation, report, post, interviews, essays, creative task, colloquium, project work, case-task
Forms control	Pass fail exam, exam
Required resources	Personal computer, software, radio installation equipment: assembly soldering station, dismantling soldering station, radio installation tools, lamp, soldering iron, radio elements, oscilloscope, multimeter, smoke traps, tips for a soldering iron, etc. Teaching and learning aids: Izyumov N. M. Linde D. P. - “Fundamentals of Radio Engineering”, Zyryanov Yu. T., Belousov O. A., Fedyunin P. A. - “Fundamentals of Radio Engineering Systems”, Kabushkin N. I. - "Fundamentals of Management"; V. V. Petrov - “Adjustment, diagnostics and monitoring of the operability of assembled nodes, blocks and devices of radioelectronic equipment, equipment of wire communication, elements of nodes of impulse and computer equipment”
Language of instruction	Russian, Kazakh
Post-requisites	Organization of work on the diagnosis of electronic equipment.

Specification of professional module 5
“Testing of electronic equipment”

Scope of competence	Conducting standard tests of devices, units and devices of electronic equipment
Name and code of the module	Testing of electronic equipment
The purpose of the module	After studying this module, the student will be able to conduct tests of radio electronic equipment.
Level of professional qualification	4
Training outcomes by module	<ol style="list-style-type: none"> 1. To determine the method of testing electronic equipment. 2. To analyze the causes of failure of electronic equipment during testing 3. To draw conclusions based on test results.
A summary of the content (sections, themes)	<ol style="list-style-type: none"> 1. Tests of radio-electronic equipment in the order of conducting, determined by technical documentation 2. Determination of individual characteristics of electronic equipment 3. Tests on the nature of external influences on electronic equipment 4. Verifying the performance of each circuit element 5. Verification of parameters and characteristics of a radio device 6. Identifying the causes of failure of electronic equipment 7. Enumeration of requirements for parameters of electronic equipment 8. Determination of the working conditions of electronic equipment 9. Evaluation of the performance of electronic equipment
Prerequisites	Physics, Mathematics, Geometry, Computer Science
Discipline module makers	<p>Methods for testing electronic equipment</p> <p>Basics of Radio Engineering</p> <p>Methods and means of testing electrical measuring instruments</p> <p>Methods and technologies for testing radio-electronic equipment</p> <p>Internship</p>

Module type (mandatory, optional)	Mandatory
Labor intensity (credits / academic hours)	10 credits /300 hours
Duration of the module	
Form of teaching	Full-time
Education technology	Modular
Form of organization of educational process. Teaching methods.	Lecture, independent work, practical lesson, labs. Oral interaction, testing, presentation, report, post, interviews, essays, creative task, colloquium, project work, case-task
Forms control	Pass fail exam, exam
Required resources	Personal computer, software, radio installation equipment: assembly soldering station, dismantling soldering station, radio installation tools, lamp, soldering iron, radio elements, oscilloscope, multimeter, smoke traps, tips for a soldering iron, etc. Training manuals: Izyumov N. M. Linde D. P. - “Fundamentals of Radio Engineering”, Zyryanov Yu.T., Belousov O. A., Fedyunin P. A. - “Fundamentals of Radio Systems”; Malinsky V.D. - “Tests of radio equipment”
Language training	Russian, Kazakh
Post-requisites	Planning standard tests of devices, units and devices of electronic equipment

Specification of professional module 6
“Verification of the condition of equipment received from the repair”

Scope of competence	Control of the technical condition of the equipment received from the repair
Name and code of the module	Verification of the condition of equipment received from the repair
The purpose of the module	After studying this module, the student will be able to check the status of the equipment received from the repair.
Level of professional qualification	4
Training outcomes by module	<ol style="list-style-type: none"> 1. To check the status of the equipment received from the repair 2. To keep records and analysis of indicators of the use of electronic equipment 3. To assess the technical condition of electronic equipment
A summary of the content (sections, themes)	<ol style="list-style-type: none"> 1. Testing the performance of electronic equipment 2. Measurement of parameters of circuit elements 3. Verification of results with the data from the technical documentation of electronic equipment 4. Verification of compliance with the rules of technical operation and maintenance of electronic equipment 5. Identification of installation or disassembly of radio electronic equipment circuits 6. Identification of replacement elements of the circuit of electronic equipment 7. Determination of the level of wear of electronic equipment 8. Forecasting the future service life of electronic equipment 9. Recommendation for the further operation of electronic equipment
Prerequisites	Physics, Mathematics, Geometry, Computer Science
Disciplines forming the module	<p>Basics of circuitry in telecommunications Telecommunications Theory The theory of electrical circuits in telecommunications Technical means of monitoring electronic work equipment, prospects and directions for their improvement</p>

	Internship
Module type (mandatory, optional)	Mandatory
Labor intensity (credits / academic hours)	5 credits /150 hours
Duration of the module	
Form of teaching	Full-time
Education technology	Modular
Form of organization of educational process	Lecture, independent work, practical lessons, labs.
Teaching methods	Oral interaction, testing, presentation, report, post, interviews, essays, creative task, colloquium, project work, case-task
Forms control	Pass/fail exam, exam.
Required resources	Personal computer, software, radio installation equipment: assembly soldering station, dismantling soldering station, radio installation tools, lamp, soldering iron, radio elements, oscilloscope, multimeter, smoke traps, tips for a soldering iron, etc. Training manuals: Izyumov N. M. Linde D. P. - “Fundamentals of Radio Engineering”, Zyryanov Yu.T., Belousov O. A., Fedyunin P. A. - “Fundamentals of Radio Systems”; V. V. Petrov - “Adjustment, diagnostics and monitoring of the operability of assembled nodes, blocks and devices of radioelectronic equipment, equipment of wire communication, elements of nodes of impulse and computer equipment”; Davidson, G.L. - "Troubleshooting and repair of electronic equipment"
Language of instruction	Russian, Kazakh
Post-requisites	Organization of work on checking the status of equipment received from repair

EDUCATION PROCESS PLAN

Code and profile of education: 1300000 -Communications, telecommunications and information technology. Electronic engineering.
 Specialty: 1306000 - Electronics and communications (by type)
 Qualification: 1306123- technician-radio technician

Form of training: Full-time
 Standard term of training is 2 years 10 months
 based on the general secondary education

Code module	The name cycles disciplines/modules, practices	Credit hstan	Differential testing	Exam	The amount of training time (hours)				Distribution of semester	
					TOTAL	From them:				
						Theoretical training	Practical training *	Industrial training		Individual training
GED	General educational disciplines	48			1448	1448			1-2	
BM	Basic modules	24			720	330	-	330	60	3-6
BM 1	Demonstration of ability to successful and positive business communication to the public and other languages	5	+	+	150	30	-	90	30	3-6
BM 2	Development and improvement of physical qualities	6	+	+	180	-	-	180	-	3-6

BM 3	Application of the foundations of social sciences for socialization and adaptation in society and the workforce	4		+	120	120	-	-	-	3-4
BM 4	Reading of drawings	2		+	60	30	-	30	-	3-4
BM 5	Application of basic knowledge of economics in professional activities	2		+	60	30	-	30	-	3-6
BM 6	Understanding the history, role and place of Kazakhstan in the world community	3	+	+	90	90	-	-	-	3-4
BM 7	Application of digital devices and microprocessor systems in communication technology	1		+	30		-	-	30	3-6
BM 8	Compliance with safety regulations and labor protection	1		+	30	30	-		-	5-6
PM	Professional modules on working qualifications (including industrial training and professional practice)	27	+	+	810	240	330	150	90	3-6
PM 1	Installation and dismantling of devices, units and devices of electronic equipment	11	+	+	330	120	120	60	30	3-4
PM 2	Setting and adjustment of parameters of devices, units and devices of radio-electronic equipment	7	+	+	210	60	90	30	30	3-6
PM 3	Repair of electronic equipment	9	+	+	270	60	120	60	30	3-6
	Professional modules for mid-level specialist qualifications (including in-service training and professional practice)	21		+	630	210	240	90	90	3-6
PM 4	Tests of electronic equipment	6		+	180	60	60	30	30	3-6
PM 5	Diagnostics of analog and digital devices and blocks of radio-electronic equipment.	10		+	300	120	120	30	30	3-6

PM 6	Verification of the condition of equipment received from the repair	5	+	+	150	30	60	30	30	3-6
	Total:	120			3608	2228	570	570	240	
PP	Pre-diploma practice	8			240		240			6
GP	Graduation project ***	6			180	120			60	6
IC	Intermediate certification	8			240	240				1-6
FC	Final certification	2			60	60				6
	Total on compulsory education:	144			4328	2648	810	570	300	
C	Consultation	11			332	332				1-6
O	Optional	10			300	300				1-6
	Total:	165			4960	3280	810	570	300	

Note:

* Forms of control (number of coursework, examinations), study subjects (semester distribution) are approximate and may vary depending on the forms of training, the specificities of local specialties and other circumstances in accordance with the needs of employers.

* In accordance with GCEA, TVE educational institutions can modify up to 50% of the training time for mastering training material for modules, up to 50% on each module and up to 60% (up to 80% with dual training) of training and professional practice with preserving the total hours on compulsory education.