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**PROJECT "E-QUALITY - DIGITAL EDUCATION FOR SOCIAL AND FINANCIAL
INCLUSION AND GENDER EQUALITY**

**MODULE NAME:
INDUSTRIAL TRAINING – ELECTRICAL TECHNICIAN
(DESCRIPTION)**

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1. Introduction

1. Introduction

This module description has been compiled based on information from the following sources: (i) introductory and informational meetings with stakeholders (Target group1, TG2, TG3, TG-4 and TG-5); (ii) the results of the nationwide survey, which was also focused on the three project regions, namely Issyk-Kul, Naryn and Osh regions of Kyrgyzstan; and (iii) the results and exchange of interagency experience during the study tour of representatives of the Kyrgyz educational institutions in Bulgaria from July 15 to July 24, 2022.

2. Module structure

1. 1. Name of the module:	Young Electrician (Level 1)
2. Applicable levels of NQF and EQF:	3 NQF/3 EQF
3. Prerequisites (educational requirements, if any):	Primary general education
4. Area of professional activity:	All spheres of life and main professional activity
5. About the course	Electricity is something without which it is impossible to imagine life in the modern world. Therefore, the profession of an electrician is in demand today. You can get it by graduating from college or taking a short course. And to become an electrical engineer, you need to study at a university. And if you want to master electricity in everyday life and understand the basic terms and skills, the training electronic course for a young electrician will help you
5. Purpose of the course	Mastering and understanding elementary electrical skills
6. Who is this course for?	This young electrician course is intended mainly for labor migrants, for novice electricians
6. After completing this course, students will be able to:	<ul style="list-style-type: none"> • You will form the concept of what electricity is and how to work with it competently; • Learn what materials and cables to use during installation work; • Learn how to assemble a simple electrical circuit, a circuit with a socket or a two-gang switch, a circuit with a parallel connection of lighting fixtures with a switch; • You will be able to independently assemble a complete electrical circuit of the room; • At the end of this course, you will have taken the first step towards serious learning and will be able to clearly define the direction of your interests
Learning outcomes:	



Unit of learning result No. 1: Fundamentals of Electrical Engineering		
		Stage in the migration process
Knowledge:	<ul style="list-style-type: none"> • To know about electricity; • To know the main characteristics of the current; • To know Ohm's law for a simple circuit; • To have an idea of a simple electrical circuit; • To know electrical parameters; • To be aware of the difference between series and parallel connections in an electrical circuit; • To know about electrical measurements. 	At the stage of migration
Skills:	<ul style="list-style-type: none"> • To be able to calculate the value of parameters according to Ohm's law; • To be able to draw up a simple electrical circuit; • To be able to distinguish between serial connections and parallel connections of electrical circuits; • To be able to read electrical diagrams; • To be able to measure electrical parameters 	At the stage of migration
Competencies:	<ul style="list-style-type: none"> • C1: To have the capacity to apply theoretical knowledge about electricity in everyday operations on mounting and dismantling electrical circuits and appliances; • K2: Have the ability to apply theoretical knowledge in practice; • C2: To have the capacity to properly design and draw up a simple electrical circuit; • C3: To choose and select the proper devices and ways of measurement and calculation of electrical indicators. 	At the stage of migration
Attitude: (optional)	<ul style="list-style-type: none"> • Precise using of knowledge of the basics of electrical engineering in practice. 	At the stage of migration
Unit of learning result No. 2: Materials and tools for electrical work		
Knowledge:	<ul style="list-style-type: none"> • To explain the types of electrical cables and wires; • To explain and list the types of light bulbs, switches and sockets; • Conduct a selection of materials for the installation of residential electrical wiring; • To be aware of new types of electrical materials for wiring; 	At the stage of migration; At the post-migration stage

	<ul style="list-style-type: none"> • To know the technical characteristics of materials; • Know the electrical installation tool kit 	
Skills:	<ul style="list-style-type: none"> • To be able to choose the right cables and wires; • To be able to use tools for electrical installation correctly; • To be able to work with a multimeter, as well as a low voltage indicator; • To be able to choose the types of sockets, switches and light bulbs for lighting; 	At the stage of migration; At the post-migration stage
Competencies:	<ul style="list-style-type: none"> • C5. To select the proper materials for the installation of residential electrical wiring; • C6. To choose the right methods and tools for electrical installation; • C7. To choose the right materials for electrical installation; • C8. To have the capacity to select and apply the appropriate electrical measuring instruments in measurement procedures 	At the stage of migration; At the post-migration stage
Attitude: (optional)	<ul style="list-style-type: none"> • Be careful in choosing of materials and tools for electrical work 	At the stage of migration; At the post-migration stage
Unit of learning result No. 3: Calculation of home circuits energy loads		
Knowledge:	<ul style="list-style-type: none"> • To know the electricity consumer groups; • Determine the installed power and load current; • To know and to explain the significance and the use of the cross section of wires and cables; • To list and explain the application and usage of protection devices; • Assembling the electrical circuit of the room electrical wiring; • Connecting an electric energy meter; • To explain the application of the new methodology for calculating the load for the considered premises 	•
Skills:	<ul style="list-style-type: none"> • To be able to assemble the electrical circuit of the room electrical wiring; • To be able to determine the installed power and load current; 	•



	<ul style="list-style-type: none"> • To be able to correctly calculate the cross-section of wires and cables; • To be able to correctly determine the installed power and load current; • To be able to choose the right protection devices; • To be able to properly assemble the electrical circuit of room wiring; • To be able to connect an electric energy meter 	
Competencies:	<ul style="list-style-type: none"> • C8. To have the capacity to properly calculate the required load; • C9. To have the capacity to properly assemble an electrical wiring diagram 	•
Attitude: (optional)	<ul style="list-style-type: none"> • Improve electrical load calculation skills 	•
Unit of learning result No. 4: Installation of electrical wiring of the room (Model of power supply of the room)		
Knowledge:	<ul style="list-style-type: none"> • To know and observe safety precautions during installation; • To know and explain the process of laying down wires and cables; • To know and explain the process of installing of junction boxes and switchboard; • To know and explain the process and different ways of connecting wires; • To know and explain the process of installing of a circuit breaker. 	•
Skills:	<ul style="list-style-type: none"> • To be able to comply with the required level of safety regulations; • To be able to independently assemble a complete electrical circuit; • To be able to read wiring diagrams correctly; • To be able to lay wires and cables; • To be able to install the mounting box and switchboard;; • To be able to connect wires correctly;; • To be able to install a circuit breaker. 	•
Competencies:	<ul style="list-style-type: none"> • C10. To organize properly the workplace for efficient work; • C11. To comply with safety regulations; • C12. To have the capacity to properly assemble electrical wiring. 	•
Attitude: (optional)	<ul style="list-style-type: none"> • To be careful in connecting the circuit to the power supply; 	•



	<ul style="list-style-type: none">• To have and demonstrate an honest approach to work when performing installation.	
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2. Topics covered by the module:

1. Topic 1: Fundamentals of electrical engineering

- 1.1. What is electricity?
- 1.2. Main characteristics of current and electrical parameters
- 1.3. Ohm's law
- 1.4. Simple electrical circuit
- 1.5. Series and Parallel Connections of an Electrical Circuit

2. Topic 2: Materials and tools for electrical work

- 2.1. Types of electrical cables and wires
- 2.2. Types of light bulbs, switches and sockets
- 2.3. How to choose materials for the installation of residential wiring
- 2.4. Working with multimeter, low voltage indicator
- 2.5. All tools for electrical installation

3. Topic 3: Calculation of home load

- 3.1. Division of all consumers into groups
- 3.2. Determination of installed power and load current
- 3.3. Choice of core cross section and wire type
- 3.4. Choice of protection devices
- 3.5. Assembly of the electrical circuit of the room electrical wiring with the connection of an electric energy meter

4. Topic 4: Installation of the electrical wiring of the premises (Model of the electrical supply of the premises)

- 4.1. Safety precautions for electrical work
- 4.2. Wiring
- 4.3. Installation of mounting boxes and switchboard



- 4.4. Wire connection methods
- 4.5. Installing the circuit breaker

2. List of educational digital tools:

(Video tutorials; MS presentations; MS Word and PDF files: role-plays, quizzes, etc. Available and developed for the module)

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3. Links/references (sources of information):

1. https://trigada.ucoz.com/index/osnovy_ehlektromontazhnykh_rabot/0-42
2. <https://www.smsm.ru/articles/vidy-i-primenenie-kabeley-i-provodov/>
3. <http://www.electrolibrary.info/>

4. Logical cross-reference matrix

Unit of learning outcome / competencies Topic	EPO 1				EPO 2			EPO 3		EPO 4		
	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10	K11	K12
Topic 1	X		X					X				
Topic 1.1		X		X					X			
Topic 1.2			X									
Topic 1.3	X	X						X				
Topic 1.4			X									
Topic 1.5	X											
Topic 2					X							
Topic 2.1					X	X						
Topic 2.2							X					
Topic 2.3					X							
Topic 2.4						X						
Topic 2.5							X					
Тема 3								X				
Topic 3.1								X				
Topic 3.2									X			
Topic 3.3									X			
Topic 3.4								X				



Topic 3.5										✗			
Тема 4											✗		✗
Topic 4.1												✗	
Topic 4.2										✗	✗	✗	✗
Topic 4.3											✗	✗	✗
Topic 4.4											✗	✗	✗
Topic 4.5										✗	✗	✗	✗

5.Exam methodology

The exam is the final stage of studying the discipline and aims to test the theoretical knowledge of the trainees, their skills and ability to apply the acquired knowledge in solving practical problems.