Passport of the educational program

Code and classification of the field of education	B 062 Electrical and power engineering
Code and classification of the direction of training	6B071 Engineering
Number and name of the educational program group	6B07100037
Number and name of the educational program	6B07125 Power Engineering
The purpose of the program	Provision of conditions for obtaining a full-fledged, high-quality professional education, professional competence in the field of electric power industry, acquisition of practical skills necessary for further professional activity.
Distinctive features of the educational program	1. The university has a modern high-tech laboratory base corresponding to the implementation of scientific research 2. Close partnerships have been established with leading companies in Kazakhstan such as: JSC "United Energy Service Company", JSC "KEGOC" 3. According to this educational program, the discipline "Automation of electric power facilities" was introduced, which allows students to master the principles of centralized management, transmission and processing of information by modern technical means in power supply management systems, automatic devices used in industrial power supply systems 4. Commercialization of scientific projects 5. The possibility of studying for one semester in the near and far abroad under the academic mobility program
Availability of accreditation	NO
Learning outcomes	Formulate mathematical methods of calculations and calculations, basic concepts of analytical geometry at a professional level; demonstrate knowledge and skills of using fundamental physical laws and theories, as well as methods of physical research; solve typical problems. To describe analytical and numerical analysis of electrical circuits under any influences in the time and frequency domain; to evaluate transients in linear circuits; to determine the parameters of four-poles under various operating modes; to analyze the transmission of energy over long lines

	Demonstrate knowledge of the documentation requirements adopted in professional communication; understanding of oral speech within professional topics; distinguish the necessary information from foreign language sources. Analyze the structure of the electric power industry, the relationship between its various links, compare the technological process of electricity production at a power plant; solve practical problems related to the design of renewable and non-traditional energy sources; develop and correctly draw up technical and design documentation for renewable energy installations Create diagrams and drawings based on the AutoCAD computer graphics program; choose methods for processing measurement results; evaluate measurement error in accordance with the standards and technical regulations of the Republic of Kazakhstan; choose measuring instruments, organize measurement and evaluate the measurement result of various electrical quantities; use modern measuring instruments Calculate and describe the physical processes occurring in electrical circuits; evaluate the efficiency and choose the type of electrical devices for specific conditions; conduct elementary tests of electrical devices; describe the preliminary calculation of parameters and selection of electrical devices; calculate typical electrical calculations for various types of protections and automation, select the type of relay protection devices for specific electrical networks; compile and analyze relay protection circuits, perform maintenance, control and verification of relay protection devices Calculate the steady-state modes of open electrical networks; solve the steady-state modes of closed electrical networks; analyze the modes of a section of the electrical network; select a set of electrical installations for the transmission and distribution of electrical energy, consisting of substations, switchgear, current lines, overhead and cable transmission lines To calculate short-circuit currents in networks with voltages up to and above 1000 V, to assess the effects of transients on the stability of the energy system; to interpret the economic characteristics of the types of production; to analyze and calculate the duration of the production cycle; to analyze the circuits of electrical connections of RC under various operating modes; to calculate and select the main elements of the electrical part of stations and substations; to propose a rational layout of electrical equipment of open and closed switchgears; analyze and select the main circuits of power plants; select electric motors for working mechanisms and check them according to the conditions of start-up and self-start

	Calculate lighting and colorimetric calculations and measurements; choose the methods necessary for measurements; predict regulated levels of electromagnetic compatibility by steady-state voltage deviation; determine parameters and characteristics of electronic devices and devices; measure electrical quantities in semiconductor devices To determine the design parameters of electric machines and transformers; to calculate and construct static and operating characteristics of machines; to interpret the electrical circuit of the machines; to calculate the magnetic circuits of electric machines; to explain the nature of electromagnetic processes; to determine the design parameters in the EP system; to calculate and build static and operating characteristics of machines; to make electrical control circuits of the EP; to calculate the given moments of inertia and forces in the EP To choose power electrical equipment and control circuits of electrical installations in accordance with environmental conditions; to install, adjust, evaluate the effective use and maintenance of power supply facilities and systems; to determine the properties of insulating, dielectric, conductive, semiconductor magnetic, electrical materials; to use electromechanical, electronic and microprocessor automation tools to control the values of electrical quantities in order to control electric power facilities; choose the means of automation of energy facilities Describe the technical characteristics of electrical equipment; predict equipment malfunctions and take measures to prevent and eliminate them; calculate the electrical strength of the simplest insulation structures; apply methods to protect various electrical equipment from external and internal overvoltage Analyze the capabilities and select a microcontroller for process control, describe an algorithm and a program for process control; calculate and select the main elements of power converter circuits; make a preliminary calculation of parameters and select a serial converter for a specific application Systematize, summarize legal and economic information for use in professional, including entrepreneurial activities. Analyze, summarize economic information and systematize safety standards for use in professional activities disconnection of electrical safety protective equipment, selection of basic and additional dielectric protective equipment; first aid in case of electric shock; determination of the safety procedure during operation of electrical installations, admission to work and supervision during work in electrical installations up to and above 1000 V

Awarded Degree	Bachelor of engineering and technology in the educational program 6B07125 «Electric Power»
List of qualifications and positions	Students of this educational program can carry out professional activities in the following positions: operation engineer, repair engineer, testing and routine equipment adjustment engineer, electrical engineer, power engineer, electrical measurement engineer, relay protection and automation engineer, instrumentation engineer, deputy head of the repair shop, head of testing and routine equipment adjustment, deputy head of the district network, chief engineer.
Professional Area	- production of electric energy; - transmission and distribution of electrical energy; - electric energy supply.