JIZZAKH POLYTECHNIC INSTITUTE

SELF ASSESSMENT REPORT

for ASIIN

1. General data

Website of a higher education university	https://jizpi.uz/en/ https://jizpi.uz/en/evidences
Faculty/department offering the degree programmes	Faculty of Power Engineering, Department of Energy and Electrical Technology https://jizpi.uz/en/fakultetlar/6/

2. Seals applied for

Name of the degree programme (in original language)	**(Official) English translation of the title**	**Labels applied for**	**Previous accreditation (issuing agency, validity)**	**Involved Technical Committees (TC)** (will be completed by ASIIN)
BA 60710400 – Energetika muhandisligi	BA 60710400 – Power Engineering	ASIIN Eurobachelor ® Label	license OT № 5000016 (27.12.2019) State inspection of quality control of Education under the Cabinet of Ministers of the Republic of Uzbekistan	
BA 60710500 – Elektr muhandisligi	BA 60710500 – Electrical Engineering	ASIIN Eurobachelor ® Label		
MA 70710410 – Energiya tejamkorligi va energoaudit	MA 70710410 – Energy saving and energy audit	ASIIN, Euromaster® Label		
MA 70710411 – Muqobil energiya manbalari	MA 70710411 – Alternative energy sources	ASIIN, Euromaster® Label		

Characteristics of the educational programme

Title	Degree awarded (in the original language/translation into English)	Areas of specialisation	Appropriate EQF level	Form of training	Bachelor's/ joint program	Duration	The number of credits	From which year/period the educational program is implemented
BA 60710400 – Power Engineering	Energetika muhandisligi yo‘nalishi bo‘yicha Bakalavr darajasi va Muhandis energetik kvalifikatsyasi (UZB) / Bachelor's degree in Power Engineering and Power engineer qualification (Eng)	State and non-state organizations, enterprises and institutions, companies (firms), production associations, and industry enterprises	6	Full-time	Yes	4 years / 8 semesters	240 ECTS	1994
BA 60710500 – Electrical Engineering	Elektr muhandisligi yo‘nalishi bo‘yicha Bakalavr darajasi va Muhandis elektroenergetik kvalifikatsyasi (UZB) / Bachelor's degree in Electrical Engineering and Electrical engineer qualification (Eng)	State and non-state organizations, enterprises and institutions, companies (firms), production associations, and industry enterprises	6	Full-time		4 years / 8 semesters	240 ECTS	2013

MA 70710410 – Energy saving and energy audit	Energiya tejamkorligi va energoaudit mutaxassisligi bo‘yicha Magistr darajasi va Energiya tejamkorligi va energoaudit muhandisi (tadqiqotchi-pedagog) kvalifikatsyasi (UZB) / Master's degree in Energy saving and energy audit and Energy saving and energy audit engineer (researcher-pedagogue) qualification (Eng)	1) higher education, retraining and advanced training, pedagogical activities in professional educational institutions; 2) scientific and research activities and processes in the Academy of Sciences and branch research institutes and centers, as well as in higher educational institutions; 3) institutions of the retraining and advanced training education system; 4) state administration and its various territorial divisions; 5) processes of production, transformation, transmission, distribution, and consumption of thermal energy; 6) consumers of thermal and electrical energy; 7) technologies used in the heat supply system and their equipment; 8) equipment of industrial enterprises and heat supply systems of cities; 9) technological and design scientific and production institutions of the specialty.	7	Full-time		2 years / 4 semesters	120 ECTS	2019

MA 70710411 – Alternative energy sources	Muqobil energiya manbalari mutaxassisligi bo‘yicha Magistr darajasi va Muhandis-energetik (tadqiqotchi-pedagog) kvalifikatsyasi (UZB) / Master's degree in Alternative energy sources and Energy engineer (researcher-pedagogue) qualification (Eng)	1) higher education, retraining and advanced training, pedagogical activities in professional educational institutions; 2) scientific and research activities and processes in the Academy of Sciences and branch research institutes and centers, and in higher educational institutions; 3) institutions of the retraining and advanced training education system; 4) state administration and its various territorial divisions; 5) diagnostics and testing of devices based on alternative energy sources (solar, wind, geothermal, biogas, and other types of fuel resources); 6) design systems for devices based on alternative energy sources (hydraulic, solar, wind, geothermal, biogas, and other types of fuel resources); 7) solar thermal devices and systems; 8) electric power supply systems developed based on alternative energy sources; 9) enterprises for the production of energy devices from alternative energy sources; 10) facilities for the production of alternative fuel resources.	7	Full-time		2 years / 4 semesters	120 ECTS	2024

Title	Frequency of admission	Potential for enrolment of students	The average number of enrolled students	Average number of graduates from admission	Time required to complete the study
BA 60710400 – Power Engineering	Autumn/annual	220	128	81	4 years/8 semesters
BA 60710500 – Electrical Engineering	Autumn/annual	180	121	60	4 years/8 semesters
MA 70710410 – Energy saving and energy audit	Autumn/annual	15	8	6	2 years/4 semesters
MA 70710411 – Alternative energy sources	Autumn/annual	15	7	4	2 years/4 semesters

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1. THE DEGREE PROGRAMME: CONCEPT, CONTENT & IMPLEMENTATION

1.1. Objectives and learning outcomes of a degree programme

In order to integrate the national education system of the Republic of Uzbekistan into the world educational environment the Government of the Republic of Uzbekistan, the Ministry of Higher Education, Science and Innovation have developed strategic plans to ensure the perfect transition of our higher education system to the Bologna process in all aspects. In these processes, the "Concept of the development of the higher education system of the Republic of Uzbekistan until 2030", approved by the decree of the President of the Republic of Uzbekistan No. PF-5847 of October 8, 2019, is of particular importance. This Concept is aimed at the ideas of achieving transparency of the educational process at the international level, ensuring the compatibility of the national education system with other educational systems of the world, and taking a place in the ranks of the world's leading universities. It is planned that 85 percent of higher education institutions in our country will gradually transition to the credit-module system by 2030. It is planned to introduce European Credit Transfer System (ECTS) credit-module system in these higher education institutions.

Based on Decision 824 of the Court of Ministers of the Republic of Uzbekistan dated December 31, 2020 "On measures to improve the system related to the organization of educational processes in higher education institutions" and according to the regulation "On the procedure for introducing the credit-module system into the educational process in higher education institutions", starting from the 2020-2021 academic year, the step-by-step transfer of the educational process to the credit-module system in the republic's higher education institutions has introduced a much more perfect unit of measurement of education into the higher education system of our country than is currently the case. This Regulation defines the procedure for introducing the credit-module system of education based on the European Credit Transfer and Accumulation System (ECTS) for the educational process in higher education institutions.

Information on the organizational issues of introducing the credit-module system into the educational process, including the educational program, the Module handbook, ensuring academic mobility, documents related to the recognition and transfer of credits, and the forms of the annex to the diploma, as well as examples of indicators and other necessary documents for determining the student's knowledge level during academic mobility are all developed and approved by the Ministry of Higher Education, Science and Innovation of the Republic of Uzbekistan together with the Republican Council of Higher Education.

According to the Regulation, each subject taught in higher education institutions is now reflected in credits depending on the amount of its educational load. A student can earn a certain amount of credits each semester and academic year, and depending on this amount, he will be awarded a bachelor's or master's degree.

The Bologna process comprises standards, definitions, and concepts that serve as a basis for European countries to adapt their education systems accordingly. The comparison of European education systems leads to the harmonization of higher education. This, in turn, leads to cooperation between educational institutions, student and teacher exchanges in Europe, and transparency of qualifications within the education system, all of which are essential from the students' perspective.

JizPI introduced the ECTS credit module system from the 2021-2022 academic year. The distribution of credits specified in the ECTS system is 60 ECTS per year. Considering that one academic year consists of two semesters, a student must accumulate 30 credits per semester during their studies.

Table 1.1

Completion of the undergraduate program requires the accumulation of 240 ECTS credits

№	Year	Semester	Hours	ECTS
1.	1st year	1st semester	900	30
		2nd semester	900	30
2.	2nd year	3rd semester	900	30
		4th semester	900	30
3.	3rd year	5th semester	900	30
		6th semester	900	30
4.	4th year	7th semester	900	30
		8th semester	900	30
Total:			**7200 hours**	**240 ECTS**

Table 1.2

Completion of the master's program requires the accumulation of 120 credits

№	Year	Semester	Hours	ECTS
1.	1st year	1st semester	900	30
		2nd semester	900	30
2.	2nd year	3rd semester	900	30
		4th semester	900	30
Jami:			**3600 hours**	**120 ECTS**

Credit-module education has the following advantages:

- the level of academic freedom increases, independent choice of subjects, setting deadlines, choosing professors and teachers;
- the increase in the share of independent education in students' educational activities will be at least 50%;
- the creation of a developing environment in the teaching activities of teachers, consulting lessons on subjects and modules, and independent work of the student under the guidance of the teacher;
- reducing the share of theoretical education and the student's acquisition of measurable skills of practical knowledge and understanding, introduction of

various interactive educational methods and modern technologies and technical tools, continuation of practical, laboratory training in independent education

- conducting practical, laboratory training based on assessment criteria through specific types of activities

Jizzakh Polytechnic Institute (JizPI) prepares specialists on the basis of state license No. -5000016. Dated 15.12.2019 (***Appendix 1***). Awarded for accreditation, 5310200 – Electric power engineering (power supply) (At present 60710400 – Power Engineering), 5310700 – Electrical Engineering, Electromechanics, and Electrotechnology (Electric Power Engineering) (At present 60710500 – Electrical Engineering), 70710410 – Energy saving and energy audit, 70710411 – Alternative energy sources undergraduate and graduate education programs are developed based on the state educational standard of Higher Education of the Republic of Uzbekistan. Degree programmes correspond to the 6th and 7th levels of the National Qualifications Framework of the Republic of Uzbekistan, which are aligned with the 1st and 2nd cycles of The Framework of Qualifications for the European Higher Education Area and the 6th and 7th levels of the European Qualifications Framework for lifelong learning.

The National Qualifications Framework "State educational standard of higher education, classification of higher education courses and specialties" was approved by the order of the Minister of Higher and Secondary Special Education of the Republic of Uzbekistan dated October 19, 2021, on the approval of the state standard of the Republic of Uzbekistan. It was created based on the principles of "International Standard Classification of Education" (TXSK 2011) and "International Standard Classification of Education: Education and Vocational Training Fields" (TXSK-S 2013) introduced by UNESCO.

BA 60710400 – Power Engineering degree programmes focus on training engineer-energetics for state and non-state organizations, enterprises and institutions, companies (firms), production associations and industry enterprises.

BA 60710500 – Electrical Engineering degree programmes focus on training engineers-electric for state and non-state organizations, enterprises and institutions, companies (firms), production associations and industry enterprises.

MA 70710410 – Energy saving and energy audit degree programmes focus on training for the following fields:

higher education, retraining and advanced training, pedagogical activities in professional educational institutions;

scientific and research activities and processes in the Academy of Sciences, branch research institutes and centers, and in higher educational institutions;

institutions of the retraining and advanced training education system;

state administration and its various territorial divisions;

joint-stock companies;

manufacturing enterprises, including:

design of equipment for thermal power plants, centers, and industrial enterprises;

academic, research, and institutional organizations related to scientific, technical, and technological issues;

research centers; scientific and production associations; higher, advanced training and retraining;

MA 70710411 – Alternative energy sources degree programmes focus on training for the following fields:

higher education, retraining and advanced training, pedagogical activities in professional educational institutions;

scientific and research activities and processes in the Academy of Sciences, branch research institutes, centers, and in higher educational institutions;

institutions of the retraining and advanced training education system;

state administration and its various territorial divisions;

joint-stock companies;

manufacturing enterprises, including:

diagnostics and testing of devices based on alternative energy sources (solar, wind, geothermal, biogas, and other types of fuel resources);

design systems for devices based on alternative energy sources (hydraulic, solar, wind, geothermal, biogas, and other types of fuel resources);

solar thermal devices and systems;

electric power supply systems developed based on alternative energy sources;

enterprises for the production of energy devices from alternative energy sources;

facilities for the production of alternative fuel resources.

The objectives of the degree programmes are given in Table 1.3.

Table 1.3

Objectives of degree programmes

Title of DP	**Educational objectives of the DP**
BA 60710400 – Power Engineering	Training of advanced specialists with in-depth knowledge of Power Engineering, practical skills, and qualifications in the state and non-state organizations, enterprises, institutions, companies (firms), production associations, and industry enterprises.
BA 60710500 – Electrical Engineering	Training of advanced specialists with in-depth knowledge of Electrical Engineering, practical skills, and qualifications in the state and non-state organizations, enterprises and institutions, companies (firms), production associations, and industry enterprises.
MA 70710410 – Energy saving and energy audit	Training of advanced specialists with in-depth knowledge of Energy saving and energy audit, practical skills, qualifications and methodical preparation, as well as knowledge and skills required for project and research work in the Higher education, retraining and advanced training institutions, Scientific and research activities and processes in higher education institutions, Institutions of the retraining and advanced training education system, State administration and its various territorial divisions, Processes of production, transformation, transmission, distribution and consumption of thermal energy, in

	consumers of heat and electricity, Technologies and their equipment used in the heat supply system, Equipment of heat supply systems of industrial enterprises and cities, technological and design scientific and production institutions of the specialty field, as well as in technological and design scientific and production institutions of the specialty field.
MA 70710411 – Alternative energy sources	Training of advanced specialists with in-depth knowledge of Energy saving and energy audit, practical skills, qualifications and methodical preparation, as well as knowledge and skills required for project and research work in the Higher education, retraining and advanced training, professional education institutions, the Academy of Sciences and industry research institutes and centers, Institutions of the retraining and advanced training education system, State administration and its various territorial divisions, diagnostics and testing of devices based on Alternative energy sources (solar, wind, geothermal, biogas and other types of fuel resources), Design systems for devices based on Alternative energy sources (hydraulic, solar, wind, geothermal, biogas and other types of fuel resources), Solar thermal devices and systems, electric power supply systems developed based on Alternative energy sources, enterprises manufacturing energy devices from Alternative energy sources, at production facilities for Alternative fuel resources.

A bachelor who has completed the BA 60710400- Power Engineering degree programme will have the following qualifications and skills:

- be able to use the basic laws of natural sciences in professional activities, apply methods of mathematical analysis and modeling, theoretical and experimental research;
- be able to logically, correctly, reasonably, and clearly state and express thoughts, opinions, ideas, proposals, definitions, and conclusions, both orally and in writing, following the rules and norms of the state language;
- understand the essence of documents and works related to professional activities in one of the foreign languages and be able to use them to a sufficient extent for professional activities;
- be able to critically review the professional experience gained, engage in self-development, professional development, and change the type and nature of their professional activities;
- have a good understanding of potential hazards in the workplace and be able to prevent possible accidents;
- knowledge of methods of collecting, storing, processing, and using information and the ability to make independent, informed decisions in their activities;
- have the skills to provide consumers with uninterrupted and high-quality energy in the production, transformation, transmission, distribution, and consumption of energy;
- in the field of design of devices and processes, to know the technical conditions, standards, and technical specifications aimed at increasing the energy efficiency of technological devices, methods of planning work on commissioning technological devices, the procedure for organizing the

development of automated design methods, and to be able to study various energy devices;

- have the skills to develop automated devices, device parts, details, and device designs for the production, conversion, transmission, distribution, and consumption of energy types based on a systematic approach;
- have the skills to evaluate the technologies and devices for the production, conversion, transmission, distribution, and consumption of energy types, as well as the energy efficiency of buildings and structures, develop energy-saving measures and calculate their technical and economic indicators;
- technological characteristics of devices for the production, conversion, transmission, distribution, and consumption of energy types, as well as the skills to use, adjust, and install them;
- have the ability to identify the causes of existing problems in the production, transformation, transmission, distribution, and consumption of energy types, and develop measures to eliminate them and prevent their recurrence.

A bachelor who has completed the BA 60710500- Electrical Engineering degree programme will have the following qualifications and skills:

- be able to use the basic laws of natural sciences in professional activities, apply methods of mathematical analysis and modeling, theoretical and experimental research;
- be able to logically, correctly, reasonably, and clearly state and express thoughts, opinions, ideas, proposals, definitions, and conclusions, both orally and in writing, following the rules and norms of the state language;
- understand the essence of documents and works related to professional activities in one of the foreign languages and be able to use them to a sufficient extent for professional activities;
- be able to critically review the professional experience gained, engage in self-development, professional development, and change the type and nature of their professional activities;
- have a good understanding of potential hazards in the workplace and be able to prevent possible accidents;
- knowledge of methods of collecting, storing, processing and using information and the ability to make independent, informed decisions in their activities;
- have the skills to develop designs for parts, details, and assemblies of electrical machines and apparatuses in an automated manner based on a systematic approach;
- Know how to monitor compliance with technological discipline in the design of electrical machines and devices, electromechanical systems;
- knowledge of modern methods of designing electrical machines and devices, electromechanical systems;

- have the skills to develop and implement measures for the rational use of energy resources in electrical machines and apparatuses, electromechanical systems;
- have the skills to plan the resources necessary to ensure the continuity of consumers in electrical machines and devices, and electromechanical systems;
- knowledge of the rules and technology for assembling, adjusting, testing, and commissioning electrical machines and apparatus, electromechanical systems;
- have the skills to inspect the technical condition of electrical machines and apparatus, electromechanical system devices, structures, and equipment, and assess their residual resource;
- have the skills to inspect the technical condition of automated electrical and electro-technological equipment, structures, and devices, and assess their residual resource;
- know the technical conditions, standards, and technical specifications aimed at increasing the energy efficiency of technological equipment in the field of automated electrical engineering and design of electrical technological devices, methods of planning work on commissioning technological equipment, the procedure for organizing the development of automated design methods, and be able to study various energy equipment;
- have the skills to develop automated designs of parts, details, and assemblies of automated electrical drives and electrical technological devices based on a systematic approach;
- have the skills to develop automated development technologies for parts, details, and assemblies of automated electrical and electro-technological devices, as well as to assess the energy efficiency of devices, buildings, and structures, develop energy-saving measures, and calculate their technical and economic indicators;
- have the skills to design parts, details, and assemblies of automated electrical drives and electrical technological devices based on a systematic approach to the technological characteristics of automated electrical technical devices, their operation, adjustment, and installation;
- have the ability to inspect the technical condition of automated electrical and electro-technological equipment, structures, and instruments, identify the causes of problems and eliminate them, and develop measures to prevent their recurrence;
- be able to use standard methodologies and technical means in researching the results of improving the technology of using and repairing electromechanical devices in electric transport;
- have the ability to apply research results and developments in the field of electric transport; to improve the automated development of designs of electric transport, their parts, details and assemblies based on a systematic approach, to determine, evaluate and draw conclusions about the performance and energy performance of electrical equipment of electric transport, to have the ability to

test and diagnose electrical equipment used in electric transport, and to use them;

- knowledge of measures to manage the quality of development activities when creating devices and devices for the electronics industry, and the development and implementation of rules for the installation of electrical systems and equipment;
- be able to select electrical equipment for production facilities, calculate internal and external electrical networks and automate processes, and be able to develop and select electrification projects based on them, organize and implement their effective operation, achieve energy efficiency in production management, have the skills to organize technical service and operation of internal and inter-farm irrigation and reclamation, water supply networks, electrical equipment and electrotechnological devices, as well as their power supply system, electrical equipment;
- organization of technical service and operation of internal and inter-farm irrigation and reclamation, water supply networks, electrical equipment, and electrotechnological devices, as well as their power supply system;
- be able to develop and research mathematical, informational, and simulation models on the topic of experimental design and practical work being performed;
- assist in the organization and conduct of the educational process in institutions of the continuing education system (teaching staff), participate in research, collect, summarize, and analyze data, conduct training in general secondary, secondary specialized, and vocational educational institutions, and master and apply modern pedagogical and information technologies;
- have the skills to perform, implement, and master the processes of electrical machinery and apparatus systems, conduct tests to determine the operating parameters of electrical machinery and apparatus devices, inspect the technical condition of electrical machinery and apparatus devices, structures, and equipment, and assess their residual resource;
- have the skills to use semiconductor devices in the development of electrical circuits of electronic devices, to install and configure electronics, household and industrial electrical equipment, to calculate and select automation devices, to install, configure and operate, to select an electrical drive system, to select the power of electric motors, to develop electrical drive control circuits, to select adjustment and switching devices.

Master's student who has completed the MA 70710410 – Energy saving and energy audit degree programme will have the following qualifications and skills:

- have the skills to conduct scientific and applied research, process experimental results and draw scientifically based conclusions based on them, prepare and edit scientific articles, organize and conduct scientific seminars, conferences, and symposiums, and develop scientific projects;
- know how to use information and pedagogical technologies in pedagogical activities;

- know how to use innovative approaches to improving the quality and efficiency of education;
- have the skills to prepare projects for participation in projects announced at the state and abroad based on the results of scientific activities;
- have the skills to prepare projects for participation in projects announced by state, non-governmental, and non-profit organizations;
- have the skills to organize and manage production;
- have the skills to conduct energy audits of technologies and structures in the processes of production, conversion, transmission, distribution and use of thermal energy;
- to develop energy-saving measures for objects, processes, and devices in the processes of production, conversion, transmission, distribution, and use of thermal energy and to assess their technical and economic indicators;
- to know modern methods of designing heat and electricity supply at industrial enterprises and municipal enterprises and to control compliance with technological discipline;
- to have the skills to develop and implement energy-saving measures in technologies and devices for the supply and use of heat and electricity at industrial enterprises and municipal enterprises;
- to know the rules and technology for the installation, adjustment, testing, and commissioning of heat and electricity supply and use devices at industrial enterprises and municipal enterprises.

A master's student who has completed the MA 70710411 – Alternative energy sources degree programme will have the following qualifications and skills:

- have the skills to conduct scientific and applied research, process experimental results and draw scientifically based conclusions based on them, prepare and edit scientific articles, organize and conduct scientific seminars, conferences, and symposiums, and develop scientific projects;
- know how to use information and pedagogical technologies in pedagogical activities;
- know how to apply innovative approaches to improving the quality and efficiency of education;
- have the skills to prepare projects for participation in projects announced at the state and abroad based on the results of scientific activities;
- have the skills to prepare projects for participation in projects announced by state, non-governmental, and non-profit organizations;
- have the skills to organize and manage production;
- have the skills to conduct tests to determine the operating parameters of energy devices based on alternative energy sources;
- to have the skills to manage, monitor, and master processes in electrical and thermal energy systems of consumers through energy devices based on alternative energy sources;

- to know how to control compliance with technological discipline in the design of electrical and thermal energy systems through energy devices based on alternative energy sources;
- to know modern methods of designing the installation of energy devices based on alternative energy sources;
- to have the skills to develop and implement measures for the rational use of energy resources through the widespread introduction of energy devices based on alternative energy sources;
- to have the skills to develop measures necessary to ensure the continuity of heat and electricity supply to consumers using energy devices based on alternative energy sources;
- to know the rules and technology for assembling, adjusting, testing, and commissioning energy devices and components based on alternative energy sources;
- to have the skills to inspect the technical condition of equipment, structures, and energy devices based on alternative energy sources and assess the residual resource.

1.1.1. Degree programme

60710400 – Power Engineering

60710400 – Power Engineering program –encompasses a set of tools, methods, techniques, and styles of human activity aimed at producing, converting, transmitting, distributing, and consuming energy types, increasing and monitoring the efficiency of their use, determining the prospects for the industry, and developing professional skills and managerial abilities.

Objects of professional activity:

- Power Engineering in state and non-state organizations, enterprises and institutions, companies (firms), production associations and industry enterprises.
- 60710400 – Power Engineering Graduates of the bachelor's degree program in Power Engineering, upon completion of pedagogical retraining, have the right to engage in pedagogical activities in teaching general and specialized subjects determined by the authorized management bodies of education in professional educational institutions;

60710500 – Electrical Engineering

60710500 – Electrical Engineering program – covers a set of tools, methods, techniques and styles of human activity aimed at mastering the theory of the working processes of electric machines, transformers and electrical apparatus, their production, design, technical maintenance and their diagnostics, testing and operation, studying the management of automated electric drives and electrical technological complexes, knowledge of their operation and increasing the efficiency of their use and monitoring, manufacturing mechanical and electromechanical devices intended for the use of electric rolling stock in railway transport and increasing the operational efficiency of vehicles using mechanical and electromechanical devices, designing electrotechnological, electrotechnical and electromechanical devices, power supply systems, power transmission lines and substations, operating and repairing electrical equipment,

determining the prospects of the field for the effective use of electrical energy, professional skills and competence.

Objects of professional activity:

- Engineer-electroenergetics in state and non-state organizations, enterprises and institutions, companies (firms), production associations and industry enterprises.

- BA 60710500 – Electrical Engineering Graduates of the bachelor's degree program in Power Engineering, upon completion of pedagogical retraining, have the right to engage in pedagogical activities in teaching general and specialized subjects determined by the authorized management bodies of education in professional educational institutions;

After graduation, undergraduate graduates in the degree programmes BA 60710400 – Power Engineering and BA 60710500 – Electrical Engineering will be able to work as engineer-energetics in state and non-state organizations, enterprises and institutions, companies (firms), production associations and industry enterprises. They can also work as specialists in the Academy of Sciences of the Republic of Uzbekistan and network research institutes, in organizations dealing with the problems of energy sciences, and in the laboratories of production enterprises.

Types of professional activities of bachelors in degree programmes 60710400 – Power Engineering and 60710500 – Electrical Engineering:

1. Scientific research;
2. Organizational-management;
3. Project and construction;
4. Information and analytical activities

Professional duties of bachelors in the fields of education 60710400 – Power Engineering.

In accordance with the 6th qualification level of the National Qualification Framework for the field of study 60710400 - Power Engineering and the areas, objects, and types of bachelor's professional activities, a bachelor's degree graduate must be able to effectively perform the following professional tasks:

In scientific research activities:

study scientific sources of scientific and technical information on energy published in the republic and abroad;

direct participation in the implementation of scientific and technical work in the field;

participation in the collection, processing, and analysis of scientific and technical information on the topic (task) and systematization of the obtained information;

participation in the implementation of scientific and technical results and developments in practice;

use of modern information technologies, computer equipment, and communication tools in practical activities;

be able to analyze existing technological problems in the production, transformation, transmission, distribution, and consumption of energy types, in increasing the efficiency of their use, and in monitoring;

use of modern technological processes in the production, transformation, transmission, distribution, and consumption of energy types;

recommendation and use of scientifically based systems;

development of technological solutions for the organization and improvement of production in the production, transformation, transmission, distribution, and consumption of energy types, increasing the efficiency of their use and monitoring.

In organizational-management activities:

effective use of existing modern technologies and technical means in the field of increasing the efficiency of production, transformation, transmission and use of energy types, management and monitoring of compliance with environmental requirements in the production process, taking measures to assess and improve their indicators;

knowledge and application of electrical and technical safety standards in the production, transformation, transmission, distribution, and consumption of energy types, increasing the efficiency of their use and monitoring;

development of methods and mechanisms for monitoring and assessing the quality of production processes associated with the use of modern information technology systems;

Implementation of solutions to professional problems in practice.

organization and management of the work of the primary production link;

to draw up a work plan for the activities being performed and to implement it, control it, and evaluate the results of the work performed.

In project and construction activities:

based on a modern approach to the design of devices, parts, assemblies used in the production of energy types, heat calculations, experimental research of energy-saving device samples, and selection of measuring tools and methods, development of methods of constructive and technical and economic calculations, organization of labor and management of production processes;

participation in the design of the main devices of the process of production, transformation, transmission, distribution, and consumption of energy types, taking into account environmental requirements and ensuring safety in the implementation of work;

organization and management of production in organizations and enterprises of production, transformation, transmission, distribution, and consumption of energy types, development and research of mathematical, informational, and simulation models on the topic of experimental design and practical work being performed;

development of design and program documentation, development and research of mathematical, informational, and simulation models on the subject of experimental design and practical work being carried out, development of design and program documentation;

application in practice of international and professional standards of information technologies, modern methods, instrumental and computational tools in accordance with the specialty of training.

In information-analytical activities:

assessment of the effectiveness of projects;

preparation of reports on the results of information-analytical activities;

assessment of the effectiveness of management decisions.

Professional duties of bachelors in the fields of education 60710500 – Electrical Engineering.

In accordance with the 6th qualification level of the National Qualification Framework for the field of study 60710500 – Electrical Engineering and the areas, objects, and types of bachelor's professional activities, a bachelor's degree graduate must be able to effectively perform the following professional tasks:

In scientific research activities:

study of scientific sources of scientific and technical information on energy published in the republic and abroad;

direct participation in the implementation of scientific and technical work in the field;

participation in the collection, processing, and analysis of scientific and technical information on the topic (task) and systematization of the obtained information;

participation in the implementation of scientific and technical results and developments in practice;

use of modern information technologies, computer equipment, and communication tools in practical activities;

be able to analyze existing technological problems in the design, development, testing, diagnostics, and monitoring of electrical machines, transformers, and electrical and electronic devices using a scientific approach;

effective use of electrical machines, transformers, micromachines, electrical and electronic devices, and their application in technological processes;

be able to analyze existing technological problems in the design, development, testing, and monitoring of automated electrical drives and electrical technological devices;

use of modern technological processes in the effective use of automated electric vehicles and electric technological devices;

effective use of existing technologies and technical means in the field of design, development, testing, and monitoring of equipment and technical means of automated electric vehicles and electric technological devices, taking measures to assess and improve their performance, and developing technological solutions for them;

planning and carrying out work on the adjustment, assembly, testing, preparation for operation, and effective use of electric traction machines and their parts;

developing systems that ensure the safety of electric rolling stock, organizing exemplary technical maintenance for them;

making management decisions in the event of disagreements in the process of modernization and repair of electromechanical and electrotechnical systems;

Conducting scientific research on the creation of energy-saving electrical technologies and techniques, and preparing data for scientific work reports, making decisions, applying knowledge in practice, ensuring the efficiency and quality of work, studying sources of scientific and technical information on energy supply in agriculture and water management, and publishing in the republic and abroad.

recommending and using scientifically based systems.

In organizational-management activities:

effective use of facilities, processes, systems, equipment, and technical means for the design, production, and repair of electrical machines and transformers;

participation as part of a team of performers in the development of systems, technological processes, their elements, and technological documentation;

ensuring the operational safety of electrical machines, transformers, electrical and electronic devices, electromechanical system facilities, processes, systems, equipment, and technical means;

development of technological solutions for the organization and improvement of the production of electrical machines, transformers, and electrical and electronic devices;

effective use of existing technologies and technical means in the field of design, development, testing, and effective use of equipment and technical means in the field of automated electrical drives and electrical technological devices, knowledge and application of electrical and technical safety standards, taking measures to assess and improve their indicators;

development of technological solutions for the organization and improvement of production, technical and economic analysis, selection and application of effective methods of organizing production, development of requirements for specialists in occupational safety in production;

taking into account and assessing energy efficiency indicators in technologies and technical means;

management of the production process and making management decisions;

development of methods and mechanisms for monitoring and assessing the quality of production processes, taking into account the use of modern information technology systems;

drawing up a work plan for the activities performed and their implementation, control, and evaluation of the results of the work performed;

Implementation of solutions to professional problems in practice.

organization and management of the work of the primary production unit;

drawing up a work plan for the activities performed and their implementation, control, and evaluation of the results of the work performed.

In project and construction activities:

Ability to develop the design of parts, details, and assemblies of electrical machines and apparatuses based on a systematic approach in an automated manner;

Development of designs of electrical and mechanical parts and assemblies of electrical machines and transformers in accordance with international experience;

Study, analysis, development, and application of design and technological work at enterprises manufacturing devices in electromechanical systems;

Having the skills and qualifications to fully perform design and construction, and design and technological work on the design of automated systems of electrical machines and transformers;

Development and research of mathematical, information, and simulation models on the subject of experimental and design and practical work being performed;

Development of design and software documentation;

Ability to conduct tests to determine the operating parameters of electrical machines and apparatuses;

design of parts and details of automated electrical and electrical technological devices, as well as control of assembly units, automated production processes based on a systematic approach;

participate in the design of the main equipment for conducting tests to determine the operating parameters of automated electrical and electrical technological devices, taking into account environmental requirements and ensuring safety in the implementation of work;

organize and manage production in organizations and enterprises for conducting tests to determine the operating parameters of automated electrical and electrical technological devices, develop and conduct research on the subject of experimental design and practical work, develop design and software documentation, develop design and software documentation, develop design and software documentation;

master the skills of applying international and professional standards of information technology, modern paradigms and methodologies, instrumental and computational tools in practice in accordance with the specialty of training;

develop the design of parts, details and assemblies of electric machines and devices of electric transport traction based on a systematic approach, develop mathematical and information models on the subject of experimental design and practical work, conduct tests to determine the operating parameters of electromechanical devices of electric transport, apply international and professional standards of information technology, modern methodologies, instrumental and computational tools in practice in accordance with the specialty of training;

develop the technology of energy-saving agrotechnical methods using electrophysical effects and renewable energy sources, and be able to apply modern methods used abroad and in our country based on the specialty;

use modern communication, information, and computer technologies in design and construction;

design of electrotechnological, electrotechnical, and electromechanical devices, power supply systems, power transmission lines, and substations.

In information and analytical activities:

assessment of the effectiveness of projects;

preparation of reports on the results of information and analytical activities;

assessment of the effectiveness of management decisions.

Degree program of MA 70710410 – Energy saving and energy audit

70710410 – Energy saving and energy audit – is a specialty in the field of "Engineering" education, covering the teaching of specialized subjects in all educational institutions, the Academy of Sciences of the Republic of Uzbekistan and branch scientific research institutes, state and economic management bodies, joint-stock companies, production enterprises, including: academic, research and institutional organizations related to the design of equipment for thermal power plants, centers and industrial enterprises, scientific, technical and technological issues; research centers; scientific and production associations; higher education, advanced training and retraining.

In accordance with the 7th qualification level of the National Qualification Framework and the areas, objects, and types of professional activities of the master's degree in the specialty 70710410 - Energy saving and energy audit, a master's degree graduate must be able to perform the following professional tasks:

In scientific research and pedagogical activities:

conduct scientific, applied research, analyze experimental results, and draw scientifically based conclusions based on them, and discover scientific innovations;

prepare and edit scientific articles, reports, pamphlets, educational literature, develop scientific reviews on the topic of the research being conducted, compile abstracts and bibliographies;

purposefully search and find information about the latest scientific, design, technological, and operational achievements in scientific literature and on the Internet;

organize, hold, and actively participate in scientific seminars, conferences, and symposiums;

develop scientific projects on the topic of the relevant specialty, develop conceptual and theoretical models of the scientific problems and tasks being solved;

conduct pedagogical and educational, and methodological activities in higher education, retraining and advanced training, professional educational institutions in their specialty;

organization of the educational process and scientific activities, conducting training sessions using modern information and pedagogical technologies, and technical means of teaching;

perfect mastery of electronic (e-learning), mobile (m-learning), distance information technologies, and educational and methodological complexes;

regular improvement of pedagogical and scientific skills and qualifications.

In project and construction activities:

design energy-saving technologies and devices in the processes of production, transformation, transmission, distribution, and use of energy types;

study, analysis, development, and application of design and construction work of energy-saving technologies;

study, analysis, development, and application of design and technological work at production enterprises;

have the skills and qualifications to fully perform design and construction, and design and technological work on the design of thermal energy supply at industrial enterprises and municipal services;

have experience in performing design and construction work on the design of electrical power supply of industrial enterprises and cities in scientific research institutes and organizations, and their application;

have the skills and experience to perform design and construction work on the design of thermal energy supply at industrial enterprises and municipal services using modern information and digital technologies in accordance with current requirements.

In analytical and control activities:

knowledge of the laws and regulatory legal acts of the Republic of Uzbekistan on the rational use of thermal energy by state, local governments, and business entities, and the ability to use them in their activities;

development of conceptual and theoretical models of scientific problems and tasks being solved in the field of designing energy-saving technologies and devices in the processes of production, transformation, transmission, distribution, and use of thermal energy, and implementation of recommendations and developments based on the results of scientific research into practice;

development of ways to improve the quality of work on the design of energy-saving technologies and devices in the processes of production, transformation, transmission, distribution, and use of thermal energy and its development;

analysis and comparison of indicators characterizing processes and phenomena related to the design of energy-saving technologies and devices in the processes of production, transformation, transmission, distribution, and use of thermal energy in Uzbekistan and abroad, and identification of risks that threaten economic security.

In organizational and managerial, production and service activities:

Developing methods and mechanisms for monitoring and assessing the quality of production processes using modern information technology systems;

Organizing the work of a team of performers;

Drawing up a work plan and controlling this work, planning the resources necessary for the work, and evaluating the results of one's own work;

Monitoring the compliance of production processes with environmental protection, fire, technical, and labor safety requirements;

Compliance with the rules of professional ethics.

In production and service activities:

participate as part of the team of performers in conducting energy audits of technologies and devices for the production, transformation, transmission, distribution, and use of thermal energy;

develop energy-saving measures for objects, processes, and devices in the processes of production, transformation, transmission, distribution, and use of thermal energy and assess their technical and economic indicators;

participate as part of the team of performers in the development of systems, technological processes, their elements, and technological documentation;

select and apply effective methods of organizing production;

develop an analytical review of the current situation on the use of energy-saving technologies and devices in the processes of production, transformation, transmission, distribution, and use of thermal energy;

participate as a participant in expert groups on the examination of projects on topics relevant to the specialization of energy efficiency and energy audit in the processes of production, transformation, transmission, distribution, and use of thermal energy;

develop technological solutions for the organization and improvement of production;

technical and economic analysis;

selection and application of effective methods of organizing production;

organization and implementation of paid educational services;

provision of various services on topics relevant to the specialization.

Degree program of MA 70710411 – Alternative energy sources

70710411 – Alternative Energy Sources – is a specialty in the field of “Engineering” education, covering the entire range of industrial organizations engaged in the teaching of specialized subjects in all educational institutions, the Academy of Sciences of the Republic of Uzbekistan and industry research institutes, state and economic management bodies, joint-stock companies, manufacturing enterprises, including: design, production, installation, adjustment and operation of solar and wind power plants, their networks and their equipment.

In accordance with the 7th qualification level of the National Qualification Framework in the specialty 70710411-Alternative Energy Sources and the areas, objects, and types of professional activities of the master's degree graduate, a master's degree graduate must be able to perform the following professional tasks:

In scientific research and pedagogical activities:

conducting scientific and applied research, analyzing experimental results and drawing scientifically based conclusions based on them, and discovering scientific innovations;

preparing and editing scientific articles, reports, pamphlets, educational literature, developing scientific reviews on the topic of the research being conducted, compiling abstracts and bibliographies;

purposefully searching and finding information about the latest scientific, design, technological, and operational achievements in scientific literature and on the Internet;

organizing, holding, and actively participating in scientific seminars, conferences, and symposiums;

developing scientific projects on the topic of the relevant specialty, developing conceptual and theoretical models of the scientific problems and tasks being solved;

conducting pedagogical, educational, and methodological activities in higher education, retraining and advanced training, professional educational institutions in their specialty;

organization of the educational process and scientific activities, conducting training sessions using modern information and pedagogical technologies, and technical means of teaching;

perfect mastery of electronic (e-learning), mobile (m-learning), distance information technologies, and educational and methodological complexes;

regular improvement of pedagogical and scientific skills and qualifications.

In project and construction activities:

design of solar photovoltaic power plants and their components, parts, and assemblies;

design of wind power plants and their components, parts, and assemblies;

study, analysis, development, and application of design and technological work in manufacturing enterprises;

study, analysis, development, and application of design and construction work in the use of biomass energy, energy devices based on it;

acquire the skills and qualifications to fully perform design and construction and design and technological work on the design of electrical and thermal energy systems using energy devices based on alternative energy sources (solar, wind, bioenergy, geothermal, hydropower, etc.);

acquire experience in performing design and construction work on the design of energy devices based on alternative energy sources in research institutes and organizations, and their application;

To have the skills and experience to carry out design and construction work on the design of consumer electrical and thermal energy systems using energy devices based on alternative energy sources, in accordance with current requirements, using modern information and digital technologies.

In analytical and control activities:

knowledge of the laws and regulatory legal acts of the Republic of Uzbekistan on the rational use of electricity by state, local governments, and business entities, and the ability to use them in their activities;

development of conceptual and theoretical models of scientific problems and tasks being solved in the field of designing electric and thermal power systems using energy devices based on alternative energy sources and implementation of recommendations and developments based on the results of scientific research into practice;

development of ways to improve the quality of work on designing uninterrupted power supply to consumers using energy devices based on alternative energy sources and their development;

analysis and comparison of indicators characterizing processes and phenomena related to improving the quality of electric and thermal power systems in the field of alternative energy sources in Uzbekistan and abroad, and identification of risks that threaten economic security.

In organizational and managerial, production and service activities:

Development of methods and mechanisms for monitoring and assessing the quality of production processes using modern information technology systems;

Organizing the work of a team of performers;

Drawing up a work plan and controlling this work, planning the resources necessary for the performance of work, and evaluating the results of one's own work;

Monitoring the compliance of production processes with environmental protection, fire, technical, and labor safety requirements;

Compliance with the rules of professional ethics.

In production and service activities:

Effective use of objects, processes, systems, equipment, and technical means of electric and thermal power systems through energy devices based on alternative energy sources;

Participation as part of a team of performers in the development of systems, technological processes, their elements, and technological documentation;

Ensuring the operational safety of objects, processes, systems, equipment, and technical means of the power supply system through energy devices based on alternative energy sources;

development of technological solutions for the organization and improvement of production;

technical and economic analysis;

selection and application of effective methods of organizing production;

development of an analytical review of the current situation in the repair, installation, commissioning, and operation of electrical and thermal power systems using energy devices based on alternative energy sources;

participation as a participant in expert groups for the examination of projects on topics relevant to the specialization of alternative energy sources;

organization and implementation of paid educational services;

provision of various services on topics relevant to the specialization.

1.1.2. Learning outcomes of degree programs.

The objectives and outcomes of degree programmes have been developed based on the Dublin Descriptors. The degree programmes are published as open information on the university website (https://jizpi.uz/en/) and are accessible to all interested parties. The learning outcomes are presented in the subject-matrix table. (*Tables 1.4- 1.7*)

The learning outcomes can be found on the university website at the following links:

1. https://jizpi.uz/en/yonalish/2/
2. https://jizpi.uz/en/yonalish/3/
3. https://jizpi.uz/en/yonalish/4/
4. https://jizpi.uz/en/yonalish/5/

The professional competencies of the workforce, including employers, students, and faculty members, are developed by the working group responsible for the educational program.

The labor market requirements and the demands and suggestions of the users of personnel and educational resources are taken into account through collaboration with relevant partners in the field of the subjects and their components in the curriculum. The professional competencies and learning outcomes of the relevant educational program are determined based on the results of these discussions.

The objectives and outcomes of the degree programmes are essential for societal development and the labor market. Therefore, they are regularly analyzed by competent authorities, and recommendations for additional changes and improvements are proposed when necessary.

Prior to the final approval of the educational programs, they were approved by the Coordinating Council of the Republic with external expertise at its meeting No. 4 on August 24, 2021. The educational programs were approved by order No. 365 of the Ministry of Higher and Secondary Special Education of the Republic of Uzbekistan dated August 25, 2021.

For example, the degree programmes BA 60710400 – Power Engineering, BA 60710500 – Electrical Engineering, MA 70710410 – Energy saving and energy audit and MA 70710411 – Alternative energy sources were developed by Tashkent State Technical University named after Islam Karimov and they were agreed upon by the Center for Higher Education Development Research and Application of Advanced Technologies under the Ministry of Higher Education, Science and Innovation of the Republic of Uzbekistan.

Developing an educational program:

- A working group will be established;
- The objectives, tasks, and requirements of the state educational standard and professional standards are studied;
- The educational results of the educational program are determined by the members of the working group;

- Subjects are determined to achieve educational results;
- Identified subjects agree with the personnel orderers. If necessary, additional subjects will be introduced based on the demands and proposals of personnel customers;
- The educational content of subjects aimed at ensuring educational results is developed;
- Distribution of credits (study load) is carried out based on the content of subjects;
- The prepared educational program is sent for examination based on the recommendation of the Faculty Council;
- Based on expert reviews, it is sent to the discussion of the Coordinating Council of the Republic;
- With the recommendation of the Republican Coordinating Council and the decision of the University Council, the educational program is approved by the Rector of the University and put into practice.

The objectives and outcomes of degree programmes are essential for the development of society and the labor market. For this reason, they are regularly analyzed by the relevant competent authorities and, in necessary cases, recommendations are developed for making additions and changes.

The learning outcomes and the content of degree programmes are revised at least once every 3 years, after regularly studying the development of science, technology, culture, economy, and society.

Faculty Council, university public council, as well as staff recruiters, representatives of partner industries, and members of the advisory council of students' parents take part in these processes. The curriculum is revised as necessary to meet the objectives of the degree programmes. Changes to the curriculum will be formalized accordingly.

Table 1.4. Learning Outcome Matrix-Subjects to EP 60710400 – Power Engineering

Learning Outcomes	Subject	
LO 1. Able to express himself competently in Uzbek, Russian, and foreign languages	O‘RT1204	Russian language
LO 1. Able to express himself competently in Uzbek, Russian, and foreign languages	XT11208	Foreign Language
LO 2. Capable of making decisions based on information of philosophical and historical content, methods of discussion and debate, engineering psychology, and pedagogy	DIN1204	Religious studies
LO 2. Capable of making decisions based on information of philosophical and historical content, methods of discussion and debate, engineering psychology, and pedagogy	O‘EYT1104	The latest history of Uzbekistan
LO 2. Capable of making decisions based on information of philosophical and historical content, methods of discussion and debate, engineering psychology, and pedagogy	FAL1504	Philosophy
LO 2. Capable of making decisions based on information of philosophical and historical content, methods of discussion and debate, engineering psychology, and pedagogy	MUHP2604	Engineering Psychology
LO 4. Able to apply basic and specialized knowledge in the field of mathematical, natural, and technical sciences in complex engineering activities using the results of the latest scientific achievements in the field of physics, mechanics, and the laws of higher mathematics to solve computational problems and model processes in power plants and systems	KIM1104	Chemistry
LO 4. Able to apply basic and specialized knowledge in the field of mathematical, natural, and technical sciences in complex engineering activities using the results of the latest scientific achievements in the field of physics, mechanics, and the laws of higher mathematics to solve computational problems and model processes in power plants and systems	FIZ11210	Physics
LO 4. Able to apply basic and specialized knowledge in the field of mathematical, natural, and technical sciences in complex engineering activities using the results of the latest scientific achievements in the field of physics, mechanics, and the laws of higher mathematics to solve computational problems and model processes in power plants and systems	OM112314	Higher mathematics
LO 4. Able to apply basic and specialized knowledge in the field of mathematical, natural, and technical sciences in complex engineering activities using the results of the latest scientific achievements in the field of physics, mechanics, and the laws of higher mathematics to solve computational problems and model processes in power plants and systems	NMEX1404	Theoretical mechanics
LO 5. Able to develop solutions using the laws of electronics and electrical engineering, intelligent	SIM1604	Industry Economics and

systems for solving energy problems, as well as economic laws, and the theory of process control in energy installations and systems		Management
LO 6. Able to analyze and make decisions about electrotechnological processes of industrial enterprises, as well as document energy audits based on current regulatory documents.	SKEJEA26708	Energy audit of electrotechnological processes of industrial enterprises
LO 7. Able to develop solutions using the laws of electronics and electrical engineering, intelligent systems for solving energy problems, as well as economic laws and the theory of process control in energy installations and systems.	ETEA26708	Energy audit of electrical systems
LO 8. To have the skills to select and use measuring instruments in technological processes, and to measure and monitor technological parameters.	ICHTJO‘23409	Measurements of production technological processes
LO 9. Able to analyze energy consumption and identify opportunities for energy savings, apply energy auditing methods and tools, and utilize energy management standards and regulations.	EMEN14510	Energy management
LO 10. Capable of carrying out maintenance of electric power installations and systems, performing metrological verification of the main measuring instruments, and controlling the quality of operation and management of electrical facilities	MS1404	Metrology and Standardization
LO 11. Able to understand and analyze complex phenomena occurring in electrical engineering, information technology, or computer science using a broad and thorough background in mathematics, science, and engineering	TTAT1304	Information Technology in Technical Systems
LO 12. Able to effectively use computer-aided design (CAD) software and have the ability to integrate computer graphics in solving engineering problems.	MKG1204	Engineering and Computer Graphics
LO 13. Able to make decisions based on information about health, safety, and work in the workplace, using methods of ensuring the safety of social systems for the preservation, development, and effective functioning of the individual and society	EKO1504	Ecology
LO 13. Able to make decisions based on information about health, safety, and work in the workplace, using methods of ensuring the safety of social systems for the preservation, development, and effective functioning of the individual and society	HFX1704	Life safety
LO 13. Able to make decisions based on information about health, safety, and work in the workplace, using methods of ensuring the safety of social systems for the preservation, development, and effective functioning of the individual and society	ELXI1706	Reliability and safety of the power supply system
LO 14. Able to calculate parameters of electrical circuits, analyze processes in electric power systems, using the results of the latest scientific achievements in the field of electrical engineering and electronics to solve computational problems and model processes in energy systems.	NAZEL13409	Theoretical electrical engineering
LO 14. Able to calculate parameters of electrical circuits, analyze processes in electric power systems,	YK1106	Introduction to the

using the results of the latest scientific achievements in the field of electrical engineering and electronics to solve computational problems and model processes in energy systems;		specialty
LO 15. Able to analyze electromagnetic processes of electrical machines, measure and evaluate the operating parameters of electrical machines, know how to select electrical machines and use them in industrial processes, and develop skills in diagnosing and repairing electrical machine faults. **LO 16.** Capable of calculating parameters, characteristics, selecting electrical machines, digital automated electric drive systems, and installing renewable energy sources	ELMASH2304	Electric Machines
LO 15. Able to analyze electromagnetic processes of electrical machines, measure and evaluate the operating parameters of electrical machines, know how to select electrical machines and use them in industrial processes, and develop skills in diagnosing and repairing electrical machine faults. **LO 16.** Capable of calculating parameters, characteristics, selecting electrical machines, digital automated electric drive systems, and installing renewable energy sources	ELMEX2304	Electrical mechanics
LO 17. Able to design power plant elements, electrical networks of power supply systems for enterprises and cities, as well as equipment for internal and external supply, using engineering methods in accordance with energy industry standards.	SKET16710	Power supply of industrial enterprises
LO 18. Able to design power plant elements, electrical networks of power supply systems for enterprises and cities, as well as equipment for internal and external supply, using engineering methods in accordance with energy industry standards.	SHET16709	Urban electricity supply
LO 19. Able to analyze the operation of electrical networks under normal and faulty conditions, identify voltage drops, losses, and their causes in electrical networks, and know how to design electrical networks	ETT24508	Electrical networks and systems
LO 19. Able to analyze the operation of electrical networks under normal and faulty conditions, identify voltage drops, losses, and their causes in electrical networks, and know how to design electrical networks	ETTET24508	Electrical networks of power supply systems
LO 20. Capable of calculating and selecting the main and backup types of protection for electrical power plants and substations, high and ultra-high voltage power lines, based on complex relay protection devices and automation of microprocessor complexes. **LO 21.** Capable of diagnosing and monitoring the operation of automated systems for metering and monitoring electricity consumption, relay protection, and electrical automation devices, control and measuring devices, microprocessor devices in electrical systems and networks, as well as designing relay protection and automation of electrical stations and substations, possessing skills in working with digital technology and microprocessor systems.	SPEQ23409	The electrical part of stations and substations
LO 22. Capable of diagnosing and monitoring the operation of automated systems for metering and monitoring electricity consumption, relay protection, and electrical automation devices, control and measuring devices, microprocessor devices in electrical systems and networks, as well as designing relay protection and automation of electrical stations and substations, possessing skills in working with digital	RENER2304	Digital energy

technology and microprocessor systems.		
LO 22. Capable of diagnosing and monitoring the operation of automated systems for metering and monitoring electricity consumption, relay protection, and electrical automation devices, control and measuring devices, microprocessor devices in electrical systems and networks, as well as designing relay protection and automation of electrical stations and substations, possessing skills in working with digital technology and microprocessor systems.	ENHAT2304	Automated systems for accounting and control of electricity consumption
LO 23. Capable of independently installing, repairing, adjusting, testing, and operating electrical equipment of power plants, power grids, and power supply systems of all types of enterprises, diagnostics of electromechanical systems of semiconductor energy converters with digital control	ETTMI1706	Installation and operation of the power supply system
LO 24. To have knowledge of the concept of transient processes and their causes in electrical systems, and to possess skills in mathematical modeling and analysis of transient processes. **LO 25**. Able to understand the types of overvoltages, their causes, and their effects on electrical equipment; develop recommendations for managing and reducing transients and overvoltages; and possess the skills to select and apply protective equipment against overvoltages.	O'KI2605	Transient processes and overvoltage
LO 26. To develop knowledge, skills, and abilities in the field of the first and second laws of thermodynamics, thermodynamic processes, development trends of heat engines, steam boilers, steam turbines and their types, gas and steam flow processes, and heat transfer.	ITG12310	Thermal Engineering and Hydropower
LO 27. To be able to understand the methods for integrating alternative energy sources into the power supply system and to identify technical and management problems in their use	ETTMEM24508	Alternative energy sources in the power supply system
LO 27. To be able to understand the methods for integrating alternative energy sources into the power supply system and to identify technical and management problems in their use	AEM24508	Alternative energy sources
LO 28. To understand the interrelation between the Constitution, constitutional law, and other branches of law; to clearly explain the essence of the principle of separation of powers as defined in the Constitution of the Republic of Uzbekistan; and to have the ability to identify and distinguish the similarities and differences in constitutional rights and freedoms of individuals as reflected in the Constitution	YTO'RK2604	The New Edition of the Constitution of the Republic of Uzbekistan
LO 29. To know the basics of personal finance and personal financial planning; to understand the effective use of assets and liabilities in household accounting; to have the skill to optimize income and expenses; and to be able to manage savings and investments, their conditions, and associated risks	MSA2504	Fundamentals of financial literacy
LO 29. To know the basics of personal finance and personal financial planning; to understand the effective use of assets and liabilities in household accounting; to have the skill to optimize income and expenses; and to be able to manage savings and investments, their conditions, and associated risks	II2504	Investment and innovation
LO 30. To be able to formulate and solve mathematical equations for energy processes; to understand the fundamentals of mathematical modeling of energy systems and processes; and to have the skills to conduct analysis and make informed decisions using mathematical models	EMM2505	Mathematical problems of energy

LO 31. To have skills in using software tools for energy accounting and analysis, as well as for mathematical modeling and simulation of energy processes	EEHM25505	Application of ECM in energy
LO 32. To know the basics of lighting system design and have the ability to apply energy-saving and environmentally friendly lighting technologies	EY2605	Electric lighting
LO 33. To have the ability to analyze energy problems and make decisions based on the fundamental knowledge gained during the study of energy sciences.	MA26834	Qualification internship
LO 33. To have the ability to analyze energy problems and make decisions based on the fundamental knowledge gained during the study of energy sciences.	BM14805	State certification

Table 1.5. Learning Outcome Matrix-Subjects to EP 60710500 – Electrical Engineering

Learning Outcomes	**Subject**	
LO 1. Able to express himself competently in Uzbek, Russian, and foreign languages	O‘RT1204	Russian language
LO 1. Able to express himself competently in Uzbek, Russian, and foreign languages	XT11208	Foreign Language
LO 2. Capable of making decisions based on information of philosophical and historical content, methods of discussion and debate, engineering psychology, and pedagogy	DIN1204	Religious studies
LO 2. Capable of making decisions based on information of philosophical and historical content, methods of discussion and debate, engineering psychology, and pedagogy	O‘EYT1104	The latest history of Uzbekistan
LO 2. Capable of making decisions based on information of philosophical and historical content, methods of discussion and debate, engineering psychology, and pedagogy	FAL1604	Philosophy
LO 2. Capable of making decisions based on information of philosophical and historical content, methods of discussion and debate, engineering psychology, and pedagogy	MUHP2604	Engineering Psychology
LO 3. To understand the interrelation between the Constitution, constitutional law, and other branches of law; to clearly explain the essence of the principle of separation of powers as defined in the Constitution of the Republic of Uzbekistan; and to have the ability to identify and distinguish the similarities and differences in constitutional rights and freedoms of individuals as reflected in the Constitution	YTO‘RK2604	The New Edition of the Constitution of the Republic of Uzbekistan

LO 4. Able to apply basic and specialized knowledge in the field of mathematical, natural, and technical sciences in complex engineering activities using the results of the latest scientific achievements in the field of physics, mechanics, and the laws of higher mathematics to solve computational problems and model processes in power plants and systems	KIM1104	Chemistry
LO 4. Able to apply basic and specialized knowledge in the field of mathematical, natural, and technical sciences in complex engineering activities using the results of the latest scientific achievements in the field of physics, mechanics, and the laws of higher mathematics to solve computational problems and model processes in power plants and systems	FIZ11210	Physics
LO 4. Able to apply basic and specialized knowledge in the field of mathematical, natural, and technical sciences in complex engineering activities using the results of the latest scientific achievements in the field of physics, mechanics, and the laws of higher mathematics to solve computational problems and model processes in power plants and systems	OM112314	Higher mathematics
LO 4. Able to apply basic and specialized knowledge in the field of mathematical, natural, and technical sciences in complex engineering activities using the results of the latest scientific achievements in the field of physics, mechanics, and the laws of higher mathematics to solve computational problems and model processes in power plants and systems	NMEX1304	Theoretical mechanics
LO 5. Able to develop solutions using the laws of electronics and electrical engineering, intelligent systems for solving energy problems, as well as economic laws, and the theory of process control in energy installations and systems	SIM1504	Industry Economics and Management
LO 5. Capable of carrying out maintenance of electric power installations and systems, performing metrological verification of the main measuring instruments, and controlling the quality of operation and management of electrical facilities	MS1304	Metrology and Standardization
LO 5. Able to understand and analyze complex phenomena occurring in electrical engineering, information technology, or computer science using a broad and thorough background in mathematics, science, and engineering	TTAT1304	Information Technology in Technical Systems
LO 6. Able to effectively use computer-aided design (CAD) software and have the ability to integrate computer graphics in solving engineering problems	MKG1204	Engineering and Computer Graphics
LO 7. Able to make decisions based on information about health, safety, and work in the workplace, using methods to ensure the safety of social systems for the preservation, development, and effective functioning of the individual and society	EKO1504	Ecology
LO 7. Able to make decisions based on information about health, safety, and work in the workplace, using methods to ensure the safety of social systems for the preservation, development, and effective functioning of the individual and society	HFX1704	Life safety
LO 8. Able to calculate parameters of electrical circuits, analyze processes in electric power systems,	NAZEL13409	Theoretical electrical

using the results of the latest scientific achievements in the field of electrical engineering and electronics to solve computational problems and model processes in energy systems.		engineering
LO 8. Able to calculate parameters of electrical circuits, analyze processes in electric power systems, using the results of the latest scientific achievements in the field of electrical engineering and electronics to solve computational problems and model processes in energy systems.	YK1106	Introduction to the specialty
LO 9. Able to analyze electromagnetic processes of electrical machines, measure and evaluate the operating parameters of electrical machines, know how to select electrical machines and use them in industrial processes, and develop skills in diagnosing and repairing electrical machine faults. **LO 10.** Capable of calculating parameters, characteristics, selecting electrical machines, digital automated electric drive systems, and installing renewable energy sources	EM14512	Electric Machines
LO 9. Able to analyze electromagnetic processes of electrical machines, measure and evaluate the operating parameters of electrical machines, know how to select electrical machines and use them in industrial processes, and develop skills in diagnosing and repairing electrical machine faults. **LO 10.** Capable of calculating parameters, characteristics, selecting electrical machines, digital automated electric drive systems, and installing renewable energy sources	EYUA16710	Fundamentals of Electric Drive
LO 11. To have an understanding of the role, essence, and social significance of the mathematical modeling of electrical engineering and transformers in the national economy.	EMMML16710	Mathematical modeling and design of electrical machines
LO 12. Will have the ability to know the main electronic components, explain their functions, read and design electrical and electronic circuits, and safely connect and configure electrical devices.	EEA1306	Electrical and electronic devices
LO 13. Knows the design features of special electric machines, can calculate their parameters, design, and model them. Also possesses the skills to develop and manage automated systems that operate with special electric machines.	MEM1704	Special electric machines
LO 14. To develop knowledge, skills, and abilities in the field of the first and second laws of thermodynamics, thermodynamic processes, development trends of heat engines, steam boilers, steam turbines, and their types, gas and steam flow processes, and heat transfer.	ITG12310	Thermal engineering and hydropower
LO 15. Has a good knowledge of technical regulations and normative documents used in the operation of electric machines. Can determine the operability of electric machines using testing and diagnostic devices, and is capable of efficiently organizing the operation process.	EMETS24510	Operation, repair and testing of electrical machines
LO 15. Has a good knowledge of technical regulations and normative documents used in the operation of electric machines. Can determine the operability of electric machines using testing and diagnostic devices, and is capable of efficiently organizing the operation process.	EMTE24510	Operation of electrical machines and transformers
LO 16. Has an understanding of the main structural components of electric machines (stator, rotor, winding, frame, etc.) and their manufacturing stages. Develops skills in selecting and using key technological equipment. Additionally, can technologically plan and supervise the production process of	EMICHT2706	Electric machine manufacturing technology

electric machines.		
LO 16. Has an understanding of the main structural components of electric machines (stator, rotor, winding, frame, etc.) and their manufacturing stages. Develops skills in selecting and using key technological equipment. Additionally, can technologically plan and supervise the production process of electric machines.	EAICHT2706	Electrical appliance manufacturing technology
LO 17. Able to design power plant elements, electrical networks of power supply systems for enterprises and cities, as well as equipment for internal and external supply, using engineering methods in accordance with energy industry standards.	ET2406	Electricity supply
LO 17. Able to design power plant elements, electrical networks of power supply systems for enterprises and cities, as well as equipment for internal and external supply, using engineering methods in accordance with energy industry standards.	ETT2406	Power supply systems
LO 18. Knows the structure of automated electric drives, their main components, and functions; performs automatic control of electric drives through programmable logic controllers (PLCs); and has skills in preparing and reading technical documentation.	AEYU2405	Automated electrical drives
LO 18. Knows the structure of automated electric drives, their main components, and functions; performs automatic control of electric drives through programmable logic controllers (PLCs); and has skills in preparing and reading technical documentation.	ESAEYU2405	Energy-efficient automated electrical drives
LO 18. Knows the structure of automated electric drives, their main components, and functions; performs automatic control of electric drives through programmable logic controllers (PLCs); and has skills in preparing and reading technical documentation.	ETM2405	Electrical technical materials
LO 19. Knows the types and physicochemical properties of electrical technical materials, applies testing methods in practice, and utilizes scientific methods in organizing laboratory work and experiments	EIKT2405	Electrical insulation and cable engineering
LO 19. Knows the types and physicochemical properties of electrical technical materials, applies testing methods in practice, and utilizes scientific methods in organizing laboratory work and experiments	ICHMAEYU26709	Automated electrical drives of production machinery
LO 18. Knows the structure of automated electric drives, their main components, and functions; performs automatic control of electric drives through programmable logic controllers (PLCs); and has skills in preparing and reading technical documentation.	ABN26709	Automatic control theory
LO 20. To know the basics of personal finance and personal financial planning; to understand the effective use of assets and liabilities in household accounting; to have the skill to optimize income and expenses; and to be able to manage savings and investments, their conditions, and associated risks	MSA2504	Fundamentals of financial literacy
LO 20. To know the basics of personal finance and personal financial planning; to understand the effective use of assets and liabilities in household accounting; to have the skill to optimize income and	II2504	Investment and innovation

expenses; and to be able to manage savings and investments, their conditions, and associated risks		
LO 21. Able to analyze electromagnetic processes of electrical machines, measure and evaluate the operating parameters of electrical machines, know how to select electrical machines and use them in industrial processes, and develop skills in diagnosing and repairing electrical machine faults. **LO 22.** Capable of calculating parameters, characteristics, selecting electrical machines, digital automated electric drive systems, and installing renewable energy sources	EMA2506	Fundamentals of electrical mechanics
LO 23. To be able to understand the methods for integrating alternative energy sources into the power supply system and to identify technical and management problems in their use	MEMAEQL2506	Design of energy devices based on alternative energy sources
LO 24. Knows the operating principles, construction, and control methods of micromachines; designs and programs automatic control systems based on micromachines.	M2605	Micromachines
LO 25. Able to make decisions based on information about health, safety, and work in the workplace, using methods of ensuring the safety of social systems for the preservation, development, and effective functioning of the individual and society	EQETFQ2605	Safety regulations for the operation of electrical equipment
LO 26. To have the ability to analyze energy problems and make decisions based on the fundamental knowledge gained during the study of energy sciences.	MA26834	Qualification internship
LO 26. To have the ability to analyze energy problems and make decisions based on the fundamental knowledge gained during the study of energy sciences.	BM14805	State certification

Table 1.6. Learning Outcome Matrix-Subjects to EP 70710410 – Energy saving and energy audit

Learning Outcomes	**Subject**	
LO 1. Able to participate in scientific seminars, conferences, and symposia, develop scientific projects; acquire skills in conducting scientific, applied research, processing experimental results, and drawing scientifically sound conclusions on their basis, preparing and editing scientific articles	ITM1104	Methodology of scientific research
LO 2. Able to select modern technologies and methods to improve energy efficiency. They will also be able to create models of energy-efficient devices and systems and apply modeling methods.	ETQTM1304	Modeling energy-efficient devices and systems

LO 3. Types and Potential Uses of Secondary Energy Sources. Types of heat utilization of gases emitted from technological devices. Development of energy-efficient project proposals that meet energy efficiency requirements. Knowledge of the main existing legal and regulatory documents in the field and their use	IEET1110	Energy saving in heat energy
LO 4. Gain knowledge of the types and methods of measurements in instrumental energy auditing. Study the theory of the principles of construction of accounting and control systems. The importance of energy audit methods and how to form an energy passport. Economic assessment of the quality of service and its competitiveness by type of energy equipment.	EAO‘A2310	Energy audit measurements and tools
LO 5. To have an idea of systematic analysis in solving organizational and technical issues in managing the energy economy of industrial enterprises. To know the importance of forming an energy passport for industrial enterprises. To learn to understand the main existing legal and regulatory documents in the field and be able to use them. To develop energy-efficient project proposals that meet energy efficiency requirements.	SKEA1212	Energy audit of industrial enterprises
LO 6. Study of technical and economic indicators of energy management, their place in ecology and principles of use, the ability to conduct energy monitoring, and study the main directions of energy consumption management	EM1106	Energy management
LO 7. Can explain the main characteristics and operating principles of renewable energy sources. Can also apply modern technologies and methods related to renewable energy sources in a practical setting.	EOUNEM21210	Non-conventional and renewable energy sources for energy technological facilities
LO 8. Study of technical and economic indicators of rational use of energy and regulation of electricity consumption and the ability to perform rational use of energy and regulation of electricity consumption	ERFESM2204	Rational use of energy and regulation of electricity consumption
PO 9. Able to participate in scientific seminars, conferences, and symposia, develop scientific projects; acquire skills in conducting scientific, applied research, processing experimental results, and drawing scientifically sound conclusions on their basis, preparing and editing scientific articles	ITIMDT3123438	Scientific research and academic-pedagogical work, preparation of a master's dissertation
PO 10. Capable of using information and pedagogical technologies in teaching activities and effectively using engineering and technical knowledge in conducting scientific research and	IPI312312	Scientific and pedagogical work

developing energy solutions		
PO 11. Capable of using information technologies in practical activities and effectively using engineering and technical knowledge in conducting scientific practice, processing experimental results, and drawing scientifically sound conclusions based on them	IA3410	Research practice (gaining practical experience)

Table 1.7. Learning Outcome Matrix-Subjects to EP 70710411 – Alternative energy sources

Learning Outcomes	Subject	
LO 1. Able to participate in scientific seminars, conferences, and symposia, develop scientific projects; acquire skills in conducting scientific, applied research, processing experimental results, and drawing scientifically sound conclusions on their basis, preparing and editing scientific articles	ITM1104	Methodology of scientific research
LO 2. Has knowledge of the methodology for developing curricula, subject syllabi, and work programs; is capable of conducting effective lessons using modern educational technologies such as ICT, project-based learning, modular teaching, problem-based learning, and others	MFO'M1304	Methodology of teaching special subjects
LO 3. Understands the operating principles of solar, wind, hydro, geothermal, and biochemical energy sources, as well as the methods of converting them into usable energy; evaluates the efficiency of these systems and possesses practical skills in their maintenance	MEMFIA11210	Scientific basis of using alternative energy sources
LO 4. Gains deep knowledge of the operating principles and main components of solar photovoltaic and solar thermal energy systems; designs and models solar energy systems using instruments and specialized software such as PVsyst and AutoCAD Electrical.	QEFETQ12312	Energy Systems and Equipment for the Utilization of Solar Energy
LO 5. Knows the structure, main components, and functions of power plants; performs technical calculations in designing power plants based on alternative energy sources	MEMAEQO'LET 12310	Automatic systems for designing energy devices based on alternative energy sources
LO 6. Understands the fundamentals of alternative fuel production as well as the theoretical principles of chemical and biological processes; performs practical tasks related to selecting and optimizing fuel production technologies; develops technological solutions to improve energy efficiency and reduce waste.	MYICHJ1106	Production processes of alternative fuels
LO 7. Knows the types, operating principles, and main technical characteristics of solar collectors; designs and performs calculations for the operation of solar thermal systems; masters the identification and resolution of technical problems arising in heat supply systems	QITT2106	Solar heat supply systems
LO 8. Understands the main methods of harnessing energy from solar, wind, biomass, geothermal, and other alternative energy sources; evaluates the efficiency of energy production and takes practical measures	MEMEY2204	Harvesting energy from alternative energy sources

to optimize it.		
LO 8. Knows the types of wind turbines (horizontal and vertical axis), their operating principles, and main components; possesses skills in designing wind energy systems and calculating their operational efficiency.	ZSHEQT2204	Modern wind energy devices and systems
LO 9. Able to participate in scientific seminars, conferences and symposia, develop scientific projects; acquire skills in conducting scientific, applied research, processing experimental results and formulating scientifically sound conclusions based on them, preparing and editing scientific articles.	ITIMDT3123438	Scientific research and academic-pedagogical work, preparation of a master's dissertation
LO 10. Able to use information and pedagogical technologies in teaching activities and effectively use engineering and technical knowledge in conducting scientific research and developing energy solutions.	IPI312312	Scientific and pedagogical work
LO 11. Able to use information technologies in practice and effectively use engineering and technical knowledge when conducting scientific practice and processing experimental results and drawing scientifically sound conclusions based on them.	IA3410	Research practice (gaining practical experience)

Lessons conducted in English

In the "Concept of the development of the higher education system of the Republic of Uzbekistan until 2030," approved by the decree of the President of the Republic of Uzbekistan No. PF-5847 dated October 8, 2019, has emphasized that in higher education institutions, it is urgent to systematically increase the share of professors and students who have certificates of national and international assessment systems and master foreign languages perfectly, and to increase the weight of specialized subjects taught in foreign languages according to educational directions and specialties.

Based on this decision and the initiative of the university rector, starting from the 2024/2025 academic year, appropriate measures have been taken to conduct all subjects in English for students studying in the fields of “Energy saving and Energy Audit” and “Renewable Energy Sources” The classes are being conducted by qualified instructors who hold English language certificates in the relevant field.

Curriculum, syllabus, and methodological guidelines for these subjects have been developed in English and approved by the university's Vice-Rector.

In addition, a 2+2 joint education program has been launched between Jizzakh Polytechnic Institute and Suzhou University of Science and Technology (China). Within the framework of this joint program, students in the “Power Engineering” field are also pursuing their studies. The entire educational process is conducted in English, and all regulatory documents have been developed in the same language.

1.2. Name of the degree programme

60710400 – Power Engineering, 60710500 – Electrical Engineering Bachelor’s and 70710410 – Energy saving and energy audit, and 70710411 – Alternative energy sources Master’s education programs of the same directions and specialties, and Qualification requirements, curriculum, and science programs fit perfectly. According to the content of these degree programmes, the requirements for taught subjects, teaching forms, professional internships, graduation qualification works, and master’s theses are formed. These directions and specialties are the State standard of the Republic of Uzbekistan, the State educational standard of higher education. The classification of higher education directions and specialties has been reflected.

The professional activity of the graduates fully corresponds to “Classifier basic positions of employees and professions of workers” (CBPEPW–2020). (Resolution of the Standardization, Metrology and Certification Agency of Uzbekistan on May 6, 2021, No. 05-1288).

The name of the educational program reflects its aims and results, the content of teaching, and the language of instruction of the program. The name of the educational program fully corresponds to the terminology used by the community of this discipline, as well as to the professional activities of the graduates.

Title (in Uzbek)	*Title (in English)*
BA 60710400 – Energetika muhandisligi	BA 60710400 – Power Engineering
BA 60710500 – Elektr muhandisligi	BA 60710500 – Electrical Engineering
MA 70710410 – Energiya tejamkorligi va energoaudit	MA 70710410 – Energy saving and energy audit
MA 70710411 – Muqobil energiya manbalari	MA 70710411 – Alternative energy sources

1.3. Curriculum

1.3.1. Content of the curriculum

The curriculum for degree programmes 60710400 – Power Engineering and 60710500 – Electrical Engineering enables students in these fields to achieve the planned educational outcomes.

The duration of the educational process for undergraduate students in the fields of 60710400 – Power Engineering and 60710500 – Electrical Engineering is 4 years (204 weeks in total). Its components:

- 105 weeks (51,47) – theoretical and practical training, and qualification practice,
- 14 weeks (6.86%) – attestations,
- 5 weeks (2.45%) – final State certification,
- 4 weeks (1.96%) – introduction to the credit education system,
- 57 weeks (27.94 %) - vacation.
- 57 weeks (9.31 %) - qualified training internship

75% of theoretical education and practical activities are compulsory and 25% are divided into optional subjects.

The duration of the educational process for undergraduate students in the fields of 70710410 – Energy saving and energy audit and 70710411 – Alternative energy sources for master's students is 2 years (100 weeks in total). Its components:

- 45 weeks (45%) – theoretical and practical training,
- 5 weeks (5%) - scientific practice,
- 1 week (1%) – introduction to the credit education system,
- 6 weeks (6%) – attestations,
- 10 weeks (10%) – Master's thesis preparation,
- 27 weeks (27%) – vacation,
- 6 weeks (6%) - State attestation

90% of theoretical and scientific activities are compulsory and 10% are divided into optional subjects.

Learning outcomes are defined for each module. In general, this allows us to achieve the learning outcomes of the educational program. *(Tables 1.8-1.9)*

Qualified training internships are conducted in government and non-government organizations, enterprises and institutions, companies (firms), production associations, and industry enterprises

The Qualified training internship is carried out at the following production enterprises:

1. Jizzakh regional branch of "Regional Electrical Networks" JSC.
2. "National Electric Networks of Uzbekistan" JSC Jizzakh MEN.
3. Samarkand regional branch of "Regional Electrical Networks" JSC.
4. Sirdaryo regional branch of "Regional Electrical Networks" JSC.
5. Kashkadaryo regional branch of "Regional Electrical Networks" JSC.
6. "Sh. Rashidov Textile Combine" LLC.
7. "Zenatkor temir beton mahsulotlari" LLC.

Information on qualifying practices is presented in Table 1.8. The university assumes responsibility for the quality of students' professional and scientific practice in terms of content and structure. For this purpose, the university coordinates its activities with the system of general and secondary special education. For this purpose, a production representative and professors of the department are assigned to the students to guide the joint practice on each object.

Table 1.8 Information about qualification internships

Type of internship	**1st year**	**2nd year**	**3rd year**	**4th year**	**Expected outcomes**
Qualified training internship	Not available				
Qualified training internship		Not available			
Qualified training internship			Spring semester 4 weeks, 6 days a week. 4 ECTS		Qualified training internship - focuses on strengthening theoretical knowledge in general and specialized disciplines and combining it with practical (production) processes, and on the formation of relevant practical skills, competencies, and qualifications.
Qualified training internship				Spring semester: 15 weeks, 6 days a week. 30 ECTS	Qualified training internship - focuses on strengthening theoretical knowledge in general and specialized disciplines and combining it with practical (production) processes, and on the formation of relevant practical skills, competencies, and qualifications.

At the beginning of the academic year, relevant agreements on the organization of qualification internship are concluded with the State and non-state organizations, enterprises and institutions, companies (firms), production

associations and industry enterprises *(Table 1.9).* The program for the organization of qualification internship is discussed in the department, agreed with the officials of the internship facility, and approved by the academic council of the university. The qualification internship is organized according to these programs. On the basis of the signed contracts, students are attached to internship facilities, and according to the order of the rector of the university, from the beginning of the week, all of them are sent to an internship in certain directions.

Table 1.9. Information on contracts concluded with internship facilities

№	Name of the educational program	**Contracts concluded**				
		2021	2022	2023	2024	2025
1	BA 60710400 – Power Engineering	2	2	2	4	9
2	BA 60710500 – Electrical Engineering	2	2	2	3	7
3	MA 70710410 – Energy saving and energy audit	2	2	2	2	4
4	MA 70710411 – Alternative energy sources	-	-	-	-	2

1.3.2. Structure of the programme

Each module is fully coordinated with teaching and learning units. For each module, it is determined what knowledge, skills, and competencies students will acquire.

The sequence of conducting educational subjects ensures reaching educational outcomes and securing their achievement within the academic period set in the curriculum. The educational plan is structured considering individual directions and educational courses. (Tables 1.12.-1.15)

The bachelor's degree programs in Power Engineering (60710400) and Electrical Engineering (60710500) are completed in 4 years. One academic year consists of 2 semesters (a total of 8 semesters over the entire education period), each semester comprising no less than 15 academic weeks. The total credit amount for 4 years is 240 ECTS.

The master's degree programs in MA 70710410 – Energy saving and energy audit, MA 70710411 – Alternative energy sources are completed in 2 years. One academic year consists of 2 semesters (a total of 4 semesters over the entire education period), each semester comprising no less than 15 academic weeks. The total credit amount for 2 years is 120 ECTS.

For various reasons (family circumstances, academic debt from subjects, health problems, etc.), students may not be able to collect the specified credits on time. In such cases, according to the Regulation No. 824 of the Cabinet of Ministers of the Republic of Uzbekistan "On Measures to Improve the System of Educational Process Organization in Higher Education Institutions", higher education for students who could not collect enough credits After admission to the 1st year of lim institutions, the total period of studying in the bachelor's degree can last up to 8 years, and master's studies up to 4 years after admission to the first year of the bachelor's program.

On average, 2-3 % of students do not transfer from one course to another for various reasons. Information about students who did not transfer from one course to another due to reasons such as family conditions, academic debt from subjects, health problems in the last 5 academic years is presented in the following table 1.10:

Table 1.10. Information on students who have not transferred from one course to another in the program of study in the last 5 years

Academic year	Number of students who did not transfer from course to course (BA 60710400 – Power Engineering)	Number of students who did not transfer from course to course (BA 60710500 – Electrical Engineering)	Number of students who did not transfer from course to course (MA 70710410 – Energy saving and energy audit)	Number of students who did not transfer from course to course (MA 70710411 – Alternative energy sources)
2020/2021	1	4	2	
2021/2022	5	-	2	
2022/2023	3	-	2	
2023/2024	3	-	4	
2024/2025	1	1	1	2
Total:	13	5	11	2

Table 1.11. Curriculum of 60710400- Power Engineering

1st academic year, 1st semester

Subject code	Qualification code of the subject	Name of subject	Hours	Credits	Type of choice
1.03.	KIM1104	Chemistry	120	4	Compulsory
1.04.	XT11208	Foreign Language	120	4	Compulsory
1.05.	FIZ11210	Physics	180	6	Compulsory
1.06.	OM112314	Higher mathematics	180	6	Compulsory
1.07.	O‘EYT1104	The latest history of Uzbekistan	120	4	Compulsory
1.18.	YK1106	Introduction to the Specialty	180	6	Compulsory
		Total:	**900**	**30**	

1st academic year, 2nd semester

Subject code	Qualification code of the subject	Name of subject	Hours	Credits	Type of choice
1.01.	O‘RT1204	Uzbek (Russian) language	120	4	Compulsory
1.02.	DIN1204	Religious Studies	120	4	Compulsory
1.04.	XT11208	Foreign Language	120	4	Compulsory
1.05.	FIZ11210	Physics	120	4	Compulsory
1.06.	OM112314	Higher mathematics	120	4	Compulsory
1.09.	MKG1204	Engineering and Computer Graphics	120	4	Compulsory
1.17.	ITG12310	Thermal Engineering and Hydropower	180	6	Compulsory
		Total:	**900**	**30**	

2nd academic year, 3rd semester

Subject	Qualification	Name of subject	Hours	Credits	Type of choice

code	code of the subject				
1.06.	OM112314	Higher mathematics	120	4	Compulsory
1.08.	TTAT1304	Information Technology in Technical Systems	120	4	Compulsory
1.16	NAZEL13409	Theoretical Electrical Engineering	120	4	Compulsory
1.17.	ITG12310	Thermal Engineering and Hydropower	150	5	Compulsory
2.02.	SPEQ23409	The electrical part of stations and substations	150	5	Elective
	ICHTJO‘23409	Measurements of production technological processes			
2.04.	ELMASH2304	Electric Machines	120	4	Elective
	ELMEX2304	Electrical mechanics			
2.05.	RENER2304	Digital energy	120	4	Elective
	ENHAT2304	Automated systems for accounting and control of electricity consumption			
		Total:	**900**	**30**	

2nd academic year, 4th semester

Subject code	Qualification code of the subject	Name of subject	Hours	Credits	Type of choice
1.10.	MS1404	Metrology and Standardization	120	4	Compulsory
1.15.	NMEX1404	Theoretical mechanics	120	4	Compulsory
1.16.	NAZEL13409	Theoretical Electrical Engineering	150	5	Compulsory
1.21.	EMEN14510	Energy management	180	6	Compulsory
2.02.	SPEQ23409	The electrical part of stations and substations	120	4	Elective
	ICHTJO‘23409	Measurements of production technological processes			
2.06.	ETT24508	Electrical networks and systems	120	4	Elective
	ETTET24508	Electrical networks of power supply systems			
2.08.	ETTMEM24508	Alternative energy sources in the power supply system	90	3	Elective
	AEM24508	Alternative energy sources			
		Total:	**900**	**30**	

3rd academic year, 5th semester

Subject code	Qualification code of the subject	Name of subject	Hours	Credits	Type of choice
1.12.	FAL1504	Philosophy	120	4	Compulsory
1.13.	EKO1504	Ecology	120	4	Compulsory
1.21.	EMEN14510	Energy management	120	4	Compulsory
2.06.	ETT24508	Electrical networks and systems	120	4	Elective
	ETTET24508	Electrical networks of power supply systems			
2.07.	MSA2504	Fundamentals of financial literacy	120	4	Elective
	II2504	Investment and innovation			

2.08.	ETTMEM24508	Alternative energy sources in the power supply system	150	5	Elective
	AEM24508	Alternative energy sources			
2.09.	EMM2505	Mathematical problems of energy	150	5	Elective
	EEHM25505	Application of ECM in Energy			
		Total:	**900**	**30**	

3rd academic year, 6th semester

Subject code	Qualification code of the subject	Name of subject	Hours	Credits	Type of choice
1.11.	SIM1504	Industry Economics and Management	120	4	Compulsory
1.19.	SKET16710	Power supply of industrial enterprises	150	5	Compulsory
1.20.	SHET16709	Urban electricity supply	120	4	Compulsory
2.01.	MUHP2604	Engineering psychology	120	4	Elective
	YTO‘RK2604	The New Edition of the Constitution of the Republic of Uzbekistan			
2.02.	SKEJEA26708	Energy audit of electrotechnological processes of industrial enterprises	120	4	Elective
	ETEA26708	Energy audit of electrical systems			
2.10.	O’KI2605	Transient processes and overvoltage	150	5	Elective
	EY2605	Electric lighting			
	MA26834	Qualified internship	120	4	Compulsory
		Total:	**900**	**30**	

4th academic year, 7th semester

Subject code	Qualification code of the subject	Name of subject	Hours	Credits	Type of choice
1.14.	HFX1704	Life safety	120	4	Compulsory
1.19.	SKET16710	Power supply of industrial enterprises	150	5	Compulsory
1.20.	SHET16709	Urban electricity supply	150	5	Compulsory
1.22.	ELXI1706	Reliability and safety of the power supply system	180	6	Compulsory
1.23.	ETTMI1706	Installation and operation of the power supply system	180	6	Compulsory
2.02.	SKEJEA26708	Energy audit of electrotechnological processes of industrial enterprises	120	4	Elective
	ETEA26708	Energy audit of electrical systems			
		Total:	**900**	**30**	

4th academic year, 8th semester

Subject code	Qualification code of the subject	Name of subject	Hours	Credits	Type of choice
	MA26834	Qualification internship	900	30	Compulsory
		Total:	**900**	**30**	

*Note: ECTS credits are collected in 2 ways in the Final State Certification given in the 8th semester of the IV course.
1) Talented students of BA 60710400- Power Engineering degree programme are given graduation thesis topics, and they defend their graduation theses.
2) The rest of the students take a written exam in the final state certification (in specialized subjects).

BA 60710400- Power Engineering degree programme is completed within 4 years. One academic year consists of 2 semesters in a total of 8 semesters, and the total amount of credits is 1 ECTS 30 hours, and a total of 240 ECTS 30 hours is 7200 hours.

№	Academic year	Semester	Hours	ECTS
1.	1st year	1st semester	900	30
		2nd semester	900	30
2.	2nd year	3rd semester	900	30
		4th semester	900	30
3.	3rd year	5th semester	900	30
		6th semester	900	30
4.	4th year	7th semester	900	30
		8th semester	900	30
Total:			**7200 hours**	**240 ECTS**

Table 1.12. Curriculum of 60710500- Electrical Engineering

1st academic year, 1st semester

Subject code	Qualification code of the subject	Name of subject	Hours	Credits	Type of choice
1.03.	KIM1104	Chemistry	120	4	Compulsory
1.04.	XT11208	Foreign Language	120	4	Compulsory
1.05.	FIZ11210	Physics	180	6	Compulsory
1.06.	OM112314	Higher mathematics	180	6	Compulsory
1.07.	O‘EYT1104	The latest history of Uzbekistan	120	4	Compulsory
1.18.	YK1106	Introduction to the Specialty	180	6	Compulsory
		Total:	**900**	**30**	

1st academic year, 2nd semester

Subject code	Qualification code of the subject	Name of subject	Hours	Credits	Type of choice
1.01.	O‘RT1204	Russian language	120	4	Compulsory
1.02.	DIN1204	Religious Studies	120	4	Compulsory
1.04.	XT11208	Foreign Language	120	4	Compulsory
1.05.	FIZ11210	Physics	120	4	Compulsory
1.06.	OM112314	Higher mathematics	120	4	Compulsory
1.09.	MKG1204	Engineering and Computer Graphics	120	4	Compulsory
1.17.	ITG12310	Thermal engineering and hydropower	180	6	Compulsory
		Total:	**900**	**30**	

2nd academic year, 3rd semester

Subject code	Qualification code of the subject	Name of subject	Hours	Credits	Type of choice

1.06.	OM112314	Higher mathematics	120	4	Compulsory
1.08.	TTAT1304	Information Technology in Technical Systems	120	4	Compulsory
1.10.	MS1304	Metrology and Standardization	120	4	Compulsory
1.15.	NMEX1304	Applied Mechanics	120	4	Compulsory
1.16.	NAZEL13409	Theoretical electrical engineering	120	4	Compulsory
1.17.	ITG12310	Thermal engineering and hydropower	120	4	Compulsory
1.22.	EEA1306	Electrical and electronic devices	180	6	Compulsory
		Total:	**900**	**30**	

2nd academic year, 4th semester

Subject code	Qualification code of the subject	Name of subject	Hours	Credits	Type of choice
1.16.	NAZEL13409	Theoretical electrical engineering	150	5	Compulsory
1.19.	EM14512	Electric Machines	180	6	Compulsory
2.02.	EMETS24510	Operation, repair, and testing of electrical machines	120	4	Elective
	EMTE24510	Operation of electrical machines and transformers			
2.04.	ET2406	Electricity supply	180	6	Elective
	ETT2406	Power supply systems			
2.05.	AEYU2404	Automated electrical drives	120	4	Elective
	ESAEYU240	Energy-efficient automated electrical drives			
2.06.	ETM2405	Electrical technical materials	150	5	Elective
	EIKT2405	Electrical insulation and cable engineering			
		Total:	**900**	**30**	

3rd academic year, 5th semester

Subject code	Qualification code of the subject	Name of subject	Hours	Credits	Type of choice
1.11.	SIM1504	Industry Economics and Management	120	4	Compulsory
1.13.	EKO1504	Ecology	120	4	Compulsory
1.19.	EM14512	Electric Machines	180	6	Compulsory
2.02.	EMETS24510	Operation, repair, and testing of electrical machines	180	6	Elective
	EMTE24510	Operation of electrical machines and transformers			
2.08.	MSA2504	Fundamentals of financial literacy	120	4	Elective
	II2504	Investment and innovation			
2.09.	EMA2506	Fundamentals of electrical mechanics	180	6	Elective
	MEMAEQL2506	Design of energy devices based on alternative energy sources			
		Total:	**900**	**30**	

3rd academic year, 6th semester

Subject code	Qualification code of the subject	Name of subject	Hours	Credits	Type of choice
1.12.	FAL1604	Philosophy	120	4	Compulsory
1.20.	EYUA16710	Fundamentals of Electric Drive	120	4	Compulsory
1.21.	EMMML16710	Mathematical modeling and design of electrical machines	150	5	Compulsory
2.01.	MUHP2604	Engineering Psychology	120	4	Elective
	YTO‘RK2604	The New Edition of the Constitution of the Republic of Uzbekistan			
2.07.	ICHMAEYU26709	Automated electrical drives of production machinery	120	4	Elective
	ABN26709	Automatic control theory			
2.10.	M2605	Micromachines	150	5	Elective
	EQETFQ2605	Safety regulations for the operation of electrical equipment			
	MA26834	Qualified internship	120	4	Majburiy
		Total:	**900**	**30**	

4th academic year, 7th semester

Subject code	Qualification code of the subject	Name of subject	Hours	Credits	Type of choice
1.14.	HFX1704	Life safety	120	4	Compulsory
1.20.	EYUA16710	Fundamentals of Electric Drive	180	6	Compulsory
1.21.	EMMML16710	Mathematical modeling and design of electrical machines	150	5	Compulsory
1.23.	MEM1704	Special electric machines	120	4	Compulsory
2.03.	EMICHT2706	Electric machine manufacturing technology	180	6	Elective
	EAICHT2706	Electrical appliance manufacturing technology			
2.07.	ICHMAEYU26709	Automated electrical drives of production machinery	150	5	Elective
	ABN26709	Automatic control theory			
		Internship	180	6	Compulsory
		Total:	**900**	**30**	

4th academic year, 8th semester

Subject code	Qualification code of the subject	Name of subject	Hours	Credits	Type of choice
	MA26834	Qualification internship	900	30	Compulsory
		Total:	**900**	**30**	

*Note: ECTS credits are collected in 2 ways in the Final State Certification given in the 8th semester of the IV course.

1) Talented students of 60710500- Electrical Engineering degree programme are given graduation thesis topics, and they defend their graduation theses.

2) The rest of the students take a written exam in the final state certification (in specialized subjects).

BA 60710500- Electrical Engineering degree programme is completed within 4 years. One academic year consists of 2 semesters in a total of 8

semesters, and the total amount of credits is 1 ECTS 30 hours, and a total of 240 ECTS 30 hours is 7200 hours.

№	Academic year	Semester	Hours	ECTS
5.	1st year	1st semester	900	30
		2nd semester	900	30
6.	2nd year	3rd semester	900	30
		4th semester	900	30
7.	3rd year	5th semester	900	30
		6th semester	900	30
8.	4th year	7th semester	900	30
		8th semester	900	30
Total:			**7200 hours**	**240 ECTS**

Table 1.13. *Curriculum of 70710410 – Energy saving and energy audit*

1st academic year, 1st semester

Subject code	Qualification code of the subject	Name of subject	Hours	Credits	Type of choice
1.01.	ITMM04	Methodology of scientific research.	120	4	Compulsory
1.03.	IEET1110	Energy saving in heat energy	150	5	Compulsory
1.06.	EM1106	Energy management	180	6	Compulsory
2.01.	EOUNEM21210	Non-conventional and renewable energy sources for energy technological facilities	150	5	Elective
	EAJO`U21210	Energy audit equipment and measurement methods			
3.01.	ITIMDT3123438	Scientific research and academic-pedagogical work, preparation of a master's dissertation	180	6	Compulsory
3.02.	IPI312312	Scientific and pedagogical work	120	4	Compulsory
		Total:	**900**	**30**	

1st academic year, 2nd semester

Subject code	Qualification code of the subject	Name of subject	Hours	Credits	Type of choice
1.03.	IEET1110	Energy saving in heat energy	150	5	Compulsory
1.04.	EAO'A2310	Energy audit measurements and tools	150	5	Compulsory
1.05.	SKEA1212	Energy audit of industrial enterprises	180	6	Compulsory
2.01.	EOUNEM21210	Non-conventional and renewable energy sources for energy technological facilities	150	5	Elective
	EAJO`U21210	Energy audit equipment and measurement methods			
2.02.	ERFESM2204	Rational use of energy and regulation of electricity consumption	120	4	Elective

	BKXEA2204	Energy audit of buildings and communal facilities			
3.01.	ITIMDT3123438	Scientific research and academic-pedagogical work, preparation of a master's dissertation	90	3	Compulsory
3.02.	IPI312312	Scientific and pedagogical work	60	2	Compulsory
		Total:	**900**	**30**	

2nd academic year, 3rd semester

Subject code	Qualification code of the subject	Name of subject	Hours	Credits	Type of choice
1.02.	ETQTM1304	Modeling energy-efficient devices and systems	120	4	Compulsory
1.04.	EAO'A2310	Energy audit measurements and tools	150	5	Compulsory
1.05.	SKEA1212	Energy audit of industrial enterprises	180	6	Compulsory
3.01.	ITIMDT3123438	Scientific research and academic-pedagogical work, preparation of a master's dissertation	270	9	Compulsory
3.02.	IPI312312	Scientific and pedagogical work	180	6	Compulsory
		Total:	**900**	**30**	

2nd academic year, 4th semester

Subject code	Qualification code of the subject	Name of subject	Hours	Credits	Type of choice
3.01.	ITIMDT3123438	Scientific research and academic-pedagogical work, preparation of a master's dissertation	600	20	Compulsory
3.03.	IA3410	Research practice (gaining practical experience)	300	10	Compulsory
		Total:	**900**	**30**	

MA 70710410 – Energy saving and energy audit is completed within 2 years. An academic year consists of 2 semesters in a total of 4 semesters, and the total amount of credits is 1 ECTS 30 hours, and a total of 120 ECTS 30 hours is 3600 hours.

№	Academic year	Semester	Hours	ECTS
1.	1st year	1st semester	900	30
		2nd semester	900	30
2.	2nd year	3rd semester	900	30
		4th semester	900	30
Total:			**3600**	**120**

Table 1.14. Curriculum of 70710411-Alternative energy sources

1st academic year, 1st semester

Subject code	Qualification code of the subject	Name of subject	Hours	Credits	Type of choice
1.01.	ITM1104	Methodology of scientific research	120	4	Compulsory
1.03.	MEMFIA11210	Scientific basis for the use of alternative energy sources	150	5	Compulsory

1.06.	MYICHJ1106	Production processes of alternative fuels	180	6	Compulsory
2.02.	QITT2106	Solar heat supply systems	180	6	Elective
	MEMAEQLAT2106	Automatic systems for designing energy devices based on alternative energy sources			
3.01.	ITIMDT3123438	Scientific research and academic-pedagogical work, preparation of a master's dissertation	150	5	Compulsory
3.02.	IPI312312	Scientific and pedagogical work	120	4	Compulsory
		Total:	**900**	**30**	

1st academic year, 2nd semester

Subject code	Qualification code of subject	Name of subject	Hours	Credits	Type of choice
1.03.	MEMFIA11210	Scientific basis for the use of alternative energy sources	150	5	Compulsory
1.04.	QEFETQ12312	Energy Systems and Equipment for the Utilization of Solar Energy	180	6	Compulsory
1.05.	MEMAEQO'LET12310	Preparation for Operation and Design of Installation of Energy Systems Based on Alternative Energy Sources	150	5	Compulsory
2.02.	ZQEFT2204	Physics and technology of modern solar cells	120	4	Elective
	MEMEY2204	Harvesting energy from alternative energy sources			
2.03.	ZSHEQT2204	Modern wind energy devices and systems	120	4	Elective
	VT2204	Hydrogen technologies			
3.01.	ITIMDT3123438	Scientific research and academic-pedagogical work, preparation of a master's dissertation	90	3	Compulsory
3.02.	IPI312312	Scientific and pedagogical work	90	3	Compulsory
		Total:	**900**	**30**	

2nd academic year, 3rd semester

Subject code	Qualification code of subject	Name of subject	Hours	Credits	Type of choice
1.02.	MFO'M1304	Methodology of teaching special subjects	120	4	Compulsory
1.04.	QEFETQ12312	Energy Systems and Equipment for the Utilization of Solar Energy	180	6	Compulsory
1.05.	MEMAEQO'LET12310	Preparation for Operation and Design of Installation of Energy Systems Based on Alternative Energy Sources	150	5	Compulsory
3.01.	ITIMDT3123438	Scientific research and academic-pedagogical work, preparation of a master's dissertation	300	10	Compulsory
3.02.	IPI312312	Scientific and pedagogical work	150	5	Compulsory

Total:	**900**	**30**	

2nd academic year, 4th semester

Subject code	Qualification code of subject	Name of subject	Hours	Credits	Type of choice
3.01.	ITIMDT3123438	Scientific research and academic-pedagogical work, preparation of a master's dissertation	600	20	Compulsory
3.03.	IA3410	Research practice (gaining practical experience)	300	10	Compulsory
		Total:	**900**	**30**	

MA 70710411 –Alternative energy sources is completed within 2 years. An academic year consists of 2 semesters in a total of 4 semesters, and the total amount of credits is 1 ECTS 30 hours, and a total of 120 ECTS 30 hours is 3600 hours.

№	Academic year	Semester	Hours	ECTS
3.	1st year	1st semester	900	30
		2nd semester	900	30
4.	2nd year	3rd semester	900	30
		4th semester	900	30
Total:			**3600**	**120**

According to the established curriculum, graduate students must accumulate 30 ECTS per semester, 120 ECTS in four semesters.

Masters are engaged in the following types of scientific activities in two academic years (60 ECTS):

- Scientific research work - 38 ECTS;
- Scientific-pedagogical work - 12 ECTS;
- Qualification practice – 10 ECTS.

The following requirements are set when preparing a scientific work and a master’s thesis:

The topics of the master's thesis are determined by the department of the higher education institution, which prepares specialists, taking into account the prospects for the development of the field and the modern achievements of science, education, technology, and economy, as well as the requirements. The topics of master's dissertations, as a rule, are devoted to current scientific research issues or solving specific practical tasks.

The topic of the master’s thesis is presented to the student during the first semester. Within the subject of the master’s thesis, a professor-teacher with a degree and a scientific title in the field of specialization is appointed as a scientific supervisor. In addition, if necessary, highly qualified specialists of the Academy of Sciences of the Republic of Uzbekistan and network research institutes, project institutes, and partner organizations can be involved as scientific consultants.

Each module provides a well-integrated teaching and learning approach to meet the expected outcomes. In the modules, the knowledge to be acquired by

the students, the skills to be developed, and the competencies to be developed are clearly presented.

The consistency of the subjects ensures the achievement of the results of the educational program and the continuity of the full cycle of the educational period. Compulsory and optional subjects are included in the curricula, which ensure the formation of the specialist's professional competence and the achievement of the educational results of the educational program

1.3.3. Student mobility

The host institution is responsible for awarding credits. Recognition of credits is carried out by the sending university after receiving the transcript in accordance with the established equivalent transfer grades (ECTS) and the national grading scale. Credits are awarded upon completion of the obligations specified in the training agreement. Recognition of credits and grades obtained during academic mobility is formalized by drawing up and approving the "Discipline Equivalence Sheet" and the "Grade Equivalence Sheet".

When implementing academic mobility, an important role in building a student's learning trajectory is played by the academic advisor from the graduating department. He assists the student, a candidate for study at a partner university, in choosing the disciplines that are intended to be studied and obtaining information on the volume of credits and didactic content of the discipline. Based on the results of studying at the partner university, the student provides a transcript to their home university in Uzbek, Russian, or English.

A transcript is a final document in Uzbek, Russian, or English, confirming training under the academic mobility program. Registration of the knowledge assessment shows the student's achievements before and after studying at the partner university. The transcript contains not only ECTS credits, but also the level (course) corresponding to the conditions of study at JizPI and the scale of ECTS credits. Re-crediting a discipline is possible if the volume of the discipline (in credits) at the partner university is equal to or exceeds that, and the main content of the disciplines at JizPI and the partner organization corresponds. The head of the department endorses the report in case of equivalence of disciplines, or prepares a memo in which he argues that it is impossible to re-credit the discipline.

After all these procedures, the academic adviser, together with the head of the department conducting training in the educational program (hereinafter referred to as the graduating department), with the JizPI student, and in agreement with the partner organization, form an individual educational trajectory, taking into account the logical sequence of studying the disciplines of JizPI and the partner organization. It is possible, by agreement of partner organizations, to prepare additional documents on the equivalence of disciplines, basic degree programmes, for example, minutes of the meeting of the commission on establishing equivalence.

In agreement with the head of the graduating department, a student can choose to study a discipline that is not provided for in the working curriculum of JizPI, while re-crediting can be done through elective disciplines. In this case, a

representative of the department - a member of the working group - draws up an individual student training plan, which indicates this discipline, the plan is approved according to the procedure adopted at JizPI.

On the part of the dean of the faculty, a report is submitted to the vice-rector for academic affairs with a visa of the head of the department on the establishment of an individual study schedule for the student for the period of his stay in the partner organization, then a draft order is prepared to send the student to another university to study within the framework of the academic mobility project, agreed with by all interested parties in accordance with the JizPI procedure and submitted for signature to the rector.

Upon completion of studies at a partner university, a JizPI student must provide a copy and original transcript to the dean's office. The dean's office, based on a copy of the transcript and memos on the possibility of re-crediting disciplines, enters the results into the university information system in the student's educational card and other accounting documents. Further education of the student at JizPI takes place in accordance with the previously approved individual training schedule.

According to academic mobility programs, studies are organized between higher education institutions of the Republic.

In the autumn semester of the 2024-2025 academic year, 1 student who studied at the Faculty of Power Engineering of JizPI participated at the Slovak University of Technology, Slovak Republic.

Performance indicators of students returning to the university on the basis of academic mobility are carried out in accordance with the instructions for resubmission of subjects. Although the name of the subject differs for the convenience of the student, subjects with the same content are not submitted by students returning to the university on the basis of the academic mobility program, and these subjects are recognized. Based on the curriculum, the difference between subjects is determined, there is an opportunity to re-study these subjects, and the student continues the educational process from the next semester.

Table 1.15. Information about the exchange of students at international higher education institutions based on the Academic Mobility Program

Academic year	BA 60710400 – Power Engineering BA 60710500 – Electrical Engineering	MA 70710410 – Energy saving and energy audit MA 70710411 – Alternative energy sources
2021-2022	0	0
2022-2023	0	0
2023-2024	0	0
2024-2025	1	0
Total:	**1**	0

1.3.4. Periodic review of the curriculum

Information on the subjects included in the curriculum in recent years, based on the requirements and proposals of Personnel customers, is presented in Table 1.16

Table 1.16. Information on the subjects included in the curriculum in recent years, based on the requirements and proposals of Personnel customers

№	Educational program	Year of foundation	Subject name	Objectives of inclusion
1	60710400 - Power Engineering	2024	Energy audit of electrotechnological processes of industrial enterprises	Enhancing energy efficiency in industrial enterprises by conducting energy audits and building the competence to operate energy auditing equipment effectively
		2024	Energy audit of electrical and electronic systems	Enhancing energy efficiency in industrial enterprises by conducting energy audits and building the competence to operate energy auditing equipment effectively
		2024	Measurements of production technological processes	Able to develop solutions using the laws of electronics and electrical engineering, intelligent systems for solving energy problems, as well as economic laws and the theory of process control in energy installations and systems.
		2024	Digital energy	Capable of diagnosing and monitoring the operation of automated systems for metering and monitoring electricity consumption, relay protection, and electrical automation devices, control and measuring devices, microprocessor devices in electrical systems and networks, as well as designing relay protection and automation of electrical stations and substations, possessing skills in working with digital technology and microprocessor systems.
		2024	5+1 Internship	In accordance with the order of the rector of the Jizzakh Polytechnic Institute No. 557-T and 558-T dated September 19, 2024, a dual education program was organized for 3rd and 4th year students of the Faculty of Power Engineering in Electrical Power Engineering (Power Engineering) to apply the theoretical knowledge gained at the institute in practice at production enterprises and integrate educational processes with production.
2	60710500 – Electrical Engineering	2024	Mathematical Modeling and Design of Electric Machines	To gain in-depth knowledge, skills, and qualifications in the process of mathematical modeling and design of electrical machines in industrial enterprises

		2024	Automated electric drives	Achieving energy efficiency through automation of electrical processes in manufacturing enterprises
		2024	Energy-efficient automated electrical drives	Acquire knowledge, skills, and competencies to use energy-efficient automated electrical systems in manufacturing enterprises
		2024	5+1 Internship	In accordance with the order of the rector of the Jizzakh Polytechnic Institute No. 557-T and 558-T dated September 19, 2024, a dual education program was organized for 3rd and 4th year students of the Faculty of Power Engineering in Electrical Engineering, Electrical Mechanics and Electrical Technologies (Electrical Engineering) to apply the theoretical knowledge gained at the institute in practice at production enterprises and integrate educational processes with production.

1.4. Admission requirements

Admission of applicants to studentship is organized according to strictly established requirements and procedures, following the criteria of transparency and fairness.

Admission is organized according to transparent and fair criteria on the basis of strictly established procedures that guarantee students successful completion of the chosen educational program.

Citizens of the Republic of Uzbekistan, foreign citizens, and stateless persons with general secondary, secondary specialized, and higher education are admitted to educational organizations implementing higher education programs of the Republic of Uzbekistan. Admission to higher education institutions is governed by the Law of the Republic of Uzbekistan "On Education" No. 637 (https://lex.uz/docs/5700831) and the Decree of the President of the Republic of Uzbekistan on June 15, 2022," It is determined by the decision PQ-279 "On organization of admission processes to state higher education institutions" https://lex.uz/docs/6070837.

1.4.1. Admission requirements for the undergraduate education programme

Institutions of higher education implementing undergraduate degree programmes admit students based on the decision of the Cabinet of Ministers of the Republic of Uzbekistan No. 393 "On the approval of the Regulations on the procedure for admission to higher education institutions, transfer, restoration and expulsion of students" on the basis of the Law of the Republic of Uzbekistan "On Education".

A bachelor student who has been admitted to the undergraduate degree programmes must have taken general secondary, secondary special programs.

Applicants for bachelor's degree programs need a certificate of completion of high school (gymnasium, lyceum) or a diploma of completion of college (secondary vocational education). No practical or professional experience is necessary.

Admission of students to full-time, part-time, special correspondence, and evening (shift) forms of higher education institutions. Entrance exams (tests,

professional (creative) exam, written exam) are carried out according to the rating system of accumulated points.

Based on the payment contract approved by the relevant decision of the President of the Republic of Uzbekistan or the Cabinet of Ministers, the admission of applicants within the admission quotas and outside the admission quotas is carried out by the State Commission in accordance with the procedure established in the Regulation on admission.

Admission to higher education institutions is carried out on the basis of equal rights for all (both grants and fee-contracts), uniform admission rules, and uniform selection. the right to be admitted in line is ensured. The rest of the applicants have the right to be accepted within the payment-contract quotas established on the basis of the test score rating.

Applicants are given the right to participate in the competition in up to five undergraduate educational fields at higher education institutions.

Tests for day and evening forms of education are held every year in July-August, as a rule, in two shifts a day. The state commission will determine the specific dates for conducting the tests.

Information about the scores scored by the applicant in the test will be sent on the next day of testing, the selection result, approved in the prescribed manner, as to whether it was recommended to the student, within a week after completion of the Knowledge testing process, and will be published on the official website of the agency qualification assessment.

Individuals with disabilities participate in the selection of undergraduate education courses within the limits of the quotas.

Testing is carried out by the Knowledge and Skills Assessment Agency under the Ministry of Higher Education, Science and Innovation of the Republic of Uzbekistan.

By the decision of the President of the Republic of Uzbekistan "On additional measures to improve the system of admission to higher education institutions through tests" dated May 14, 2019 PQ-4319 From the beginning of the academic year of 2021-2022, the set of subjects for which the test is given is divided into two sections, and three subjects are mandatory for all test-takers in the first section - mother tongue (Uzbek, Russian or Karakalpak language), Mathematics and history of Uzbekistan, and in the second section two subjects corresponding to the undergraduate education chosen by the applicant were included in the department.

Entrance tests for admission to higher educational institutions will be held in large-capacity buildings located in the city of Tashkent and regional centers, ensuring the maximum openness and transparency of the test process, and the public, including applicants, can monitor the process through video surveillance. it was possible for parents to follow the entrance tests online.

For the convenience of applicants, the Ministry of Higher Education, Science and Innovation approves the bachelor’s education courses of higher education institutions and the set of subjects for which the corresponding test (professional (creative) exam) will be submitted 6 months before the start of

admission in the prescribed manner, and the announcement will be published on the website will be announced.

For applicants applying for the “Power Engineering” degree program, the exam will be held in three compulsory subjects - History of Uzbekistan, Native Language, Mathematics, and two specialty subjects - Mathematics and Physics.

For applicants applying for the “Electrical Engineering” field of study, the exam will be held in three compulsory subjects - History of Uzbekistan, Native Language, Mathematics, and two specialty subjects - Physics and Mathematics.

In accordance with the proposals of higher education institutions, based on their capabilities, selection, and the amount of accumulated points, on the basis of the decision of the State Commission, applicants may be admitted to study in addition to the quota established by the payment contract (hereinafter referred to as additional admission).

Proposals for additional admissions are submitted to the State Commission by October 15, in agreement with subordinate ministries and agencies.

The State Commission will make a decision by October 20 on the indicators of additional admission of applicants with increased payment-contract conditions based on the opportunities of higher education institutions, selection and the amount of accumulated points.

Institutions of higher education carry out additional admission among applicants whose scores are not less than the minimum score determined by the State Commission and who do not reach the main admission limits by 4 points in accordance with the indicators determined by the decision of the State Commission, strictly observing the sequence of points.

The increased payment-contract amount is determined in the following amounts compared to the actual payment-contract amount:

For applicants whose points do not reach the limit of acceptance quotas under the approved payment contract by 1 point – 1.5times;

- For those who do not reach 1.1 to 2 points - 2.0 times;
- For those who do not reach 2.1 to 3 points - 2.5 times;
- For those who do not reach 3.1 to 4 points — 3.0 times.

After fulfilling the payment-contract conditions for these amounts in the terms set by the State Commission, the applicant is admitted to study by order of the rector of the higher education institution.

Table 1.17. shows information on applicants who submitted documents in 2018-2023 in the fields of education 60710400 – Power Engineering, 60710500 – Electrical Engineering.

№	Academic year	Applicants submitted documents	Number of applicants admitted
60710400 – Power Engineering (Electric power (electricity supply))			
1	2020	767	85
2	2021	642	75
3	2022	538	78
4	2023	402	74
5	2024	128	81
60710500 – Electrical Engineering (Electrical engineering, electrical mechanics and			

electrical technology)			
1	2020	403	52
2	2021	358	50
3	2022	222	52
4	2023	155	52
5	2024	121	60

Table 1.18. Information on applicants who applied for master's programs in 70710410 – Energy saving and energy audit, and 70710411 – Alternative energy sources in 2022-2024.

№	Academic year	Applicants submitted documents	Number of applicants admitted
70710410 – Energy saving and energy audit			
1	2022	30	24
2	2023	9*	4
3	2024	8	6
70710411 – Alternative energy sources			
1	2022	0	0
2	2023	0	0
3	2024	7	4

* In the educational system of Uzbekistan, a new obligation to learn a foreign language for admission to a master's degree has been put into practice since 2022. A student applying for the Master's program must have at least a B2 level certificate.

1.4.2. Admission requirements for foreign students

General Provisions

- This Regulation establishes the procedure for admitting foreign citizens to Jizzakh Polytechnic Institute through an interview and providing them with educational scholarships.
- The admission and education of foreign citizens at higher education institutions of the Republic of Uzbekistan shall be carried out in accordance with the Law “On Education,” including the Resolution No. 393 of the Cabinet of Ministers of the Republic of Uzbekistan on the admission of foreign citizens to higher education institutions, as well as the Presidential Decree PQ-279 dated June 15, 2022, “On the organization of the admission process to state higher education institutions,” and in accordance with this Regulation.
- The education of foreign citizens at Jizzakh Polytechnic Institute shall be conducted in the languages specified in the institute’s academic programs.
- All activities related to the admission and education of foreign citizens shall be organized and coordinated by the Departments of International Cooperation, Academic Methodology, and Human Resources.
- The allocation of scholarship quotas to foreign students shall be implemented in accordance with the minutes of the Republican Commission on Work with International Rankings dated March 28, 2023 (Session No. 11), and based on the control plan to implement the 2023 Action Program aimed at improving Uzbekistan’s position in priority international social and economic rankings and indices, as stipulated in this Regulation.

Admission Procedure, Conditions, and Types of Education

- Foreign citizens shall be admitted to the undergraduate (bachelor's) level on the basis of an interview. The admission process for the master's level shall be carried out in accordance with Order No. 65 issued by the Minister of Higher Education, Science, and Innovation on March 23, 2023.
- The results of the entrance examination (interview) serve as the basis for admission to the undergraduate program at Jizzakh Polytechnic Institute.
- Upon completion of their studies, foreign citizens shall be awarded an official diploma in the prescribed format certifying their educational attainment.
- Foreign citizens arriving for study must undergo a medical examination. The procedure for medical examinations and the list of diseases that disqualify candidates from admission to educational institutions in the Republic of Uzbekistan shall be determined by the Ministry of Health of the Republic of Uzbekistan.

Admission of Foreign Citizens to the Undergraduate Program on a Scholarship Basis

- The process of admitting foreign citizens to the undergraduate level on a scholarship basis shall be carried out according to the following evaluation system. Under this system, a student may be awarded a one-year scholarship covering from 20% to 100% of the tuition fee:

a) If the applicant possesses an international or national certificate at level B2 or higher in English, German, or French – **10%** (applicable to citizens of CIS countries);
b) If the applicant has won prizes at regional or national stages of subject Olympiads in Mathematics, Physics, Chemistry, English, or Russian – **10%**;
c) If the applicant has a congenital disability – **10%**;
d) If the applicant is an orphan (under the age of 18) – **50%**;
e) If two or more foreign citizens from the same family are enrolled as students at Jizzakh Polytechnic Institute – **25%**;
f) All foreign students are guaranteed accommodation in the institute's dormitory.

- Foreign students may also be eligible for tuition fee discounts under the following conditions:

- Undergraduate and graduate students who complete the academic year with top marks (grade 5) in all subjects may receive a **50%** discount for the next academic year, based on their active participation in institute activities and upon recommendation from the International Cooperation Department;
- If the student has achieved a B2 or higher level certificate (as listed in the annex) in a foreign language in accordance with Order No. 65 of the Minister of Higher Education, Science, and Innovation dated March 23, 2023, they may receive up to a **25%** discount;
- If the student has a congenital disability and completes the academic year without academic debt, they may receive up to a **25%** discount;

- If the student is from a low-income family or is registered in the Women's Support Program and completes the academic year without academic debt, they may receive up to a **25%** discount;
- If two or more foreign citizens from the same family are students at Jizzakh Polytechnic Institute and have completed the academic year without academic debt, they may receive up to a **25%** discount.

The implementation of these benefits shall be carried out based on the recommendation of the institute's International Cooperation Department.

List of Required Documents and Submission Procedure

- In order to apply for admission to educational institutions of the Republic of Uzbekistan, foreign citizens must submit the following documents to the respective institution:
  - An application for admission;
  - Original copies of academic transcripts indicating the subjects studied and the grades (scores) obtained;
  - A medical certificate of health;
  - A national or foreign passport (with a valid visa, if applicable);
  - Six (6) photographs, size 3.5 x 4.5 cm;
  - Supporting documents in accordance with clause 3.1 (if applicable).
- The procedure for the submission and review of documents shall be determined in accordance with the guidelines approved by the Ministry of Higher Education, Science, and Innovation of the Republic of Uzbekistan.
- Once a foreign citizen has been recommended for admission, the original documents specified in clause 4.1 must be submitted to the International Cooperation Department of the institute.

Rights and Responsibilities of Foreign Citizens Studying in the Republic of Uzbekistan

- Foreign students shall have the following rights:
  - To participate in scientific research conducted by academic departments, student scientific societies, and academic clubs;
  - To use the libraries, sports complexes, clubs, and cultural centers of the educational institutions;
  - To participate in organized recreational activities.
- Foreign students shall have the following obligations:
  - To comply with the Constitution and other legal acts of the Republic of Uzbekistan, to respect local customs and traditions, and to follow the rules established for the stay and movement of foreign citizens in the country;
  - To maintain academic discipline, attend classes, fulfill all types of academic and practical assignments outlined in the curriculum, and complete examinations and assessments within the prescribed timeframe;
  - To follow the internal regulations of the educational institution and student dormitory;
  - To comply with the instructions and orders issued by the administration of the educational institution.

- In cases of academic failure, disciplinary violations, or breach of internal rules of the educational institution or student dormitory, as well as for other reasons stipulated in the regulatory legal documents of the Republic of Uzbekistan, administrative measures up to and including expulsion from the institution may be applied to foreign citizens. Foreign citizens who violate the rules of stay in the territory of the Republic of Uzbekistan shall be subject to deportation in accordance with the established procedure.

- Foreign citizens who commit crimes on the territory of the Republic of Uzbekistan shall bear legal responsibility in accordance with the laws of the Republic of Uzbekistan, unless otherwise specified in international treaties of the Republic.

- Foreign citizens who graduate or are expelled from an educational institution must leave the Republic of Uzbekistan within one month, except in cases provided for in international treaties, as well as in collective or individual agreements and contracts.

- The academic year in educational institutions begins on September 2. The dates and duration of vacations shall be determined in accordance with the academic calendar of the respective educational institution.

Procedure for Familiarizing Foreign Citizens with this Regulation

- Foreign citizens who express their intention to apply for admission to educational institutions in the Republic of Uzbekistan must be acquainted with this Regulation and must provide written confirmation of their commitment to comply with its requirements.

1.5. Workload and credits

Starting from the 2020/2021 academic year, the credit-module system of education based on the European Credit Transfer and Accumulation System (ECTS) was introduced into the educational process in higher education institutions of the Republic of Uzbekistan.

The number of hours required to achieve the expected educational outcomes based on the implementation of all types of educational activities - lecture, practical training, seminar, laboratory work, coursework, practice, and independent work - is the student's workload. The study load of students under the credit-module system consists of the time required to complete all planned work. These are the placement of educational activities such as lectures, practicals, seminars, independent and personal training, preparation of projects, exams, etc. Simply put, workload hours measure the time spent on a task, defined as direct time spent. The academic load of a full-time student in one academic year is 60 ECTS. One credit corresponds to 30 working hours.

Credit points represent the amount of study load required to complete a curriculum or module. In general, full-time tuition is equal to 60 ECTS per academic year. It is usually divided into modules. So, for example, in one year, a student can have 5 modules with the same learning load, each of which is equal to 12 ECTS, thus equaling 60 ECTS during the academic year. The credit points of the modules are added together to show the total load for the study programme: Bachelor's or Bachelor's degrees are usually 180 ECTS (3 years

full-time) to 240 ECTS (4 years full-time). Master's degrees typically range from 60 ECTS (1 year full-time) to 120 ECTS (2 years full-time). A year of full-time study at the university is usually equal to 60 ECTS and is defined as 1800 hours of study load. This means that 1 credit is equal to 30 hours. At the undergraduate education level, in the amount of 180 ECTS (5400 academic hours) for 3 years, 240 ECTS (7200 academic hours) for 4 years, and 360 ECTS (10800 academic hours) for 6 years;

at the master's level - the duration of study is 60 ECTS (1800 academic hours) for 1 year, 120 ECTS (3600 academic hours) for 2 years. They include not only classroom hours, but also time spent preparing for class, doing homework, etc.

Monitoring of students' knowledge at the university is carried out by conducting current (activity in daily classes), intermediate, and final types of monitoring based on the University's academic rules. The mid-term exam is held during the semester after the completion of the relevant section of the science programs, in order to assess the students' knowledge and practical skills. Assignments of intermediate control and final exams are developed by professors and teachers of the relevant department and approved by the head of the department. The number, form, and duration of the midterm exams are determined by the department where the subject is taught and submitted to the registrar's office at least 1 week before the beginning of the academic semester. The type of midterm control must be clearly indicated in the curriculum (syllabus) of the subject.

The student's performance in practical, seminar, laboratory classes, and independent educational tasks, as well as his activity in these classes, is evaluated by the subject teacher during the semester and is taken into account in the midterm assessment. The final type of control is held at the end of the semester (at the end of the science in medical fields) in order to determine the level of mastery of theoretical knowledge and practical skills of the student in the relevant subject. The form of conducting the final control is determined by the department that teaches this subject. The subject is reflected in the curriculum (syllabus) and is conducted in accordance with the schedule of final control types developed by the registrar's office for the organization and assessment of control work and approved by the vice-rector for academic work. Final inspections are centrally evaluated on the basis of a commission established by the sector of organization and evaluation of inspection works. Based on the agreement, professors and teachers of the relevant subject of other higher education institutions may be involved in conducting and evaluating the final type of control. The conclusion of the expert group formed by the dean of the department of the final control questions (written, test, oral and practical) from subjects of bachelor's full-time, evening education and master's majors for conducting final inspections in the 2024-2025 academic year at the university and final control questions are prepared from the questions accepted with the guarantee letter of the head of the department.

1.6. Didactics and teaching methodology

A variety of learning methods and didactic tools are used to promote learning outcomes and support student-centered learning and teaching. It must be taken into account that distance and face-to-face learning and work infrastructures are equally important and mutually enrich each other.

The educational program contains an adequate balance of contact hours and time for independent study. Introducing students to independent scientific work is an integral part of the curriculum. It is regularly checked whether the teaching and learning methods used contribute to achieving the objectives of the educational program.

Teaching conditions: lectures for students of 60710400 – Power Engineering and 60710500 – Electrical Engineering are held in auditoriums with 60-150 seats, in a combined group of 2-3 groups. Presentations, video materials, and animated videos are used to explain technological schemes based on the curriculum of the presented topic.

Theoretical knowledge obtained on the basis of calculations will be strengthened in practical classes in classrooms of 25-30 people. At the end of the practical session, the student submits the results of the practical work to the teacher.

One group is divided into two small groups in order to carry out quality laboratory training, where the number of students in the auditorium will be 12-15 people. In the laboratory sessions, they will see the proof of theoretical knowledge using the laboratory equipment and reagents prepared by the laboratory assistants of the department 1 day ago, and develop empirical experience skills for themselves. At the end of the laboratory session, the student prepares a report from the information obtained in the lesson and submits it to the teacher.

Course work topics and the structure of course work leaders are discussed at the department meeting at the beginning of the academic year and are presented to students in advance at the beginning of the academic year. Attached supervisors give recommendations and advice to students regarding coursework.

Independent study topics and independent work assignments are included in the science program. The student performs independent work on 5-10 topics based on the subject's curriculum and submits it to the teacher through the HEMIS electronic platform and in the form of a presentation in the auditorium.

Exam types are determined based on the nature and content of the subjects. An oral exam is usually given in social studies. Examinations in specialty and specialty subjects are mostly taken in written form. The results of the oral exam will be verified on the same day, and the written exam will be checked within 72 hours and recorded on the HEMIS electronic platform.

In order to increase the efficiency of teaching, to ensure the harmony of theory and practice, there are 3 specially equipped teaching laboratories, 1 scientific laboratory, and 1 academic laboratory room (for master's and doctoral

students) equipped with modern equipment for the students of the field of Power Engineering and Electrical Engineering education.

The developing continuous education system sets new requirements for the professional training of a modern specialist. The main task of higher technical educational institutions is to form professionally mature, competitive, and creative personnel. Solving this problem, raising the quality of professional training of a specialist (bachelor, master) to a new level, providing it with promising integrated teaching methods, modern concepts, and innovative teaching models, methods, and educational technologies is impossible without the didactics of degree programmes. Didactics is designed to ensure high-quality professional and didactic training of a specialist capable of effective professional activity.

Supporting the educational process of students with the help of didactic elements helps to achieve higher levels of teaching and learning. The use of didactic elements makes it easier for students to learn the educational material. To provide students with deep and comprehensive knowledge of science, it is necessary to use various methods of visualizing educational material: literature, manuals, diagrams, graphs, tables, etc.

When introducing a new subject in the curriculum of Bachelor’s and Master’s students at the university, its didactic support is also taken into account. If a new subject is included in the curriculum due to necessity, first of all, educational literature related to it is purchased and placed in the university's information resource center. Also, a catalog of audio and video materials has been prepared for all subjects and will be made available for students to use.

2. EXAMS: SYSTEM, CONCEPT & ORGANIZATION

According to the decision of the Cabinet of Ministers of the Republic of Uzbekistan No. 10 of 2008 and the decision No. 824 of December 31, 2020, "On measures to improve the system of educational process organization in higher education institutions" a student who misses 25% or more of the classroom hours allocated to one subject without reason will be expelled from the class. From this subject, it is considered that he has not been included in the final control and has not mastered the appropriate credits for this subject. Students who have received positive grades from intermediate exams and have not missed classes will be included in the final exam.

The final control over the organization and conduct of exams is carried out based on the order of the rector of JizPI. The exam can be written, oral, or in the form of a test.

During the exam, students are not allowed to leave the auditorium without an excuse, and students who leave the auditorium without permission will not be re-examined.

Students who do not comply with the established procedures will be excluded from the exam, and a relevant document will be drawn up and signed by the head of the auditorium and members of the commission. These documents are submitted to the dean of the faculty.

In the following cases, the student is considered to have violated the examination procedure: when trying to bring a mobile phone, computer and other means of communication and telecommunication, dictionary, books, leaflets to the exam; when handing out exam materials or helping others during the exam; when they talked to each other, showed answers to each other, did not submit the exam materials after the end of the time specified in the written exam; when removing exam materials from the auditorium.

A student who is unable to participate in the exam due to valid reasons (if the reasons are specified) is allowed to take the exam together with another group in the same subject, in agreement with the dean of the faculty and the head of the department.

Examinations are conducted centrally to monitor and evaluate students' knowledge. Examinations are organized and conducted by the Registrar's Office Student Learning and Assessment Sector in accordance with the academic schedule. This process is carried out in the following order: a database of control questions for a specific subject is formed, and on this basis, if the control form is written, questions are entered on a protected A3 format paper and distributed to students in the designated audience.

After the control time is up, the control work is collected by the controller, and encryption is handed over to the members. After the written works are encrypted and separated from the title page, commission members consisting of qualified specialists and practicing teachers (at least 3 specialists) responsible for the written work and leading specialists of other HEIs can be involved.

The head of the auditorium announces the beginning of the written exam and writes the start and end times of the written exam on the board.

The written exam lasts 2 academic hours (80 minutes). Taking into account the nature of the subjects, the written exam is allowed to last up to 3 academic hours (120 minutes).

Three days are given to check the written work on the protected A3 paper and enter the exam results into the Hemis platform.

Oral exam questions are compiled by a group of experts and approved by the department meeting.

Entering the auditorium, the student chooses a ticket and answers it. It takes up to 25 minutes to prepare tickets.

Each ticket consists of up to 5 questions on a topic (at least one is theoretical and the rest are practical, depending on the nature of the subject).

The evaluation criteria of the oral exam are developed by the professors and teachers of the department for each subject and approved by the department meeting.

It takes three days to upload the results of the written exam to the HEMIS platform.

In order to organize the examination process based on the principles of transparency, the test can be conducted on a computer, and up to 50 test questions can be given based on the database of subjects. It is ensured that the test questions are composed of 3 different levels of difficulty (complex, medium, and simple) and are developed on the basis of several options for each group. The test is performed on the Hemis platform, and its results are automatically recorded.

Suppose a student is dissatisfied with the results of an exam. In this case, the student has the right to appeal to the appeal commission within 1 working day from the date of the announcement of the exam results.

The student who appealed will be notified of the date and time of the examination appeal. If necessary, members of the final commission and the head of the audience may be involved in issues related to the appeal process.

The term of consideration of the appeal by the appeal commission is a maximum of 2 working days from the date of submission. Only appeal applications based on the results of their work will be accepted by examiners for review. They are not allowed to see the work of other students.

In accordance with Resolution No. 10 of the Cabinet of Ministers of the Republic of Uzbekistan (2009) and Resolution No. 824 dated December 31, 2020, the procedure for organizing retakes for students with academic debts has been established. In line with this regulation, the Rector of Jizzakh Polytechnic Institute issued Orders No. 80-AF (March 2025) and No. 237-AF (June 2025) titled “On Organizing an Additional Semester for Students with Academic Debts in Subjects”.

The vice-rector for academic affairs approves the examination schedule, and it is brought to the attention of students and teachers two weeks before the start of the faculty examination session.

Commissions consisting of at least three professors will be formed under the chairmanship of one of the leading processors of this profile to accept exams.

The points allocated for the final control make up 50% of the total points given for the assessment of knowledge in academic subjects.

Suppose a student does not meet the requirements set for the exam, such as using tickets, mobile devices, and other devices, committing disciplinary violations, and disturbing other students. In this case, the inspector may remove him from the class. In this case, a certificate of violation of the examination procedure will be drawn up; the answer sheet will be canceled by crossing it diagonally. On the printed admission slip, the invigilator will mark “Deleted for Violation” and put “0”.

For example, written exams are conducted with the help of tickets, which can consist of control question tasks and are designed for all topics of the coursework program (syllabus), and allow the evaluation of the educational achievements of students in the entire subject.

The exam ticket is made according to the following scheme:

Three questions (theoretical and practical) from different sections (modules) of science, including topics for independent study of students.

The exam card is formed according to one of the following schemes:

1) 5 closed-type test tasks, 5 open-type test tasks, 5 practical tasks on the application of calculation skills and logical thinking (assignment, making a diagram, drawing, etc.) - a total of 15 tasks;

2) closed-type tests with 1 correct answer (20-35% of total questions), closed-type tests - 20-35%, open-type tests -15-25%, matching tasks - 15-25%, tasks ordering 15- 25% - a total of 20 tasks;

3) three questions (theoretical and/or practical) from different sections (modules).

Exam cards should be 10-15% more than the number of students in the group studying this subject.

The work will be checked by another teacher. 2 weeks before the beginning of the exam session, by order of the dean of the faculty, examiners are appointed to check the written works from among the leading teachers whose qualifications match the profile of this academic subject.

If the student did not come to the exam, "0" will be put in the electronic statement. For students who do not come to the written exam due to valid reasons (illness, family circumstances), an individual exam schedule is set with the permission of the dean (extension up to two weeks after the end of the exam period).

Students who do not agree with the results of the exam can apply to the appeal commission with a reasoned application within one day (1 day) after placing the grade on the educational portal. Applications submitted after the deadline will not be considered. The application to the chairman of the appeal commission is submitted by students personally. An appeal is not accepted by a second person, including the student's parents.

In order to ensure appropriate control by the management of JizPI during the examination session, the Chairman of the Committee, the Rector, prepares the duty schedule of vice-chancellors. Teachers whose profile of the taught

subject does not match the profile of the subjects being examined are appointed as proctors (supervisors) in the auditoriums with cameras.

During the examination session, in order to ensure appropriate control by the management of JizPI, the Chairman of the Board-rector prepares the duty schedule of the vice-rectors. Teachers whose profile of the taught subject does not match the profile of the subjects being examined are appointed as proctors (supervisors) in the auditoriums with cameras.

GPA (Grade Point Average) is the average value of the student's points earned by the program, calculated according to the following formula.

$$GPA=\frac{K_1*U_1+K_2*U_2+K_3*U_3\ldots+K_n*U_n}{K_1+K_2+K_3\ldots+K_n}$$

K - the amount of ECTS allocated for each subject/module;
U- the student's grade for each subject/module;

We transfer from course to course based on the student's GPA. JizPI can independently determine the GPA when transferring students from course to course. It requires a GPA of 2.4. A student who fails to earn a passing GPA in a course will be deferred to the second year. We do not exclude students with academic debt from the semester and the results of the academic year. Students who drop out of the course receive tuition fees only for the subjects they did not take. The number of retakes per course is not limited under the contract. We define the total length of study as 8 years after first year admission for Bachelor's and 4 years after first year admission for Master's.

See the grading scale-GPA equivalence table:

Table 2.1. - Grading scale-GPA equivalence chart

The "5 scores" grading system	100-point evaluation system	GPA average
“5”	90-100	4,46-5,0
“4”	70-89,9	3,46-4,45
“3”	60-69,9	3,0-3,45
“2”	0-59,9	0-2,99

Table 2.2. Average grade point average (GPA) for degree programmes in the last 3 years

№	**Degree Programmes**	**2023**	**2024**	**2025**
1	BA 60710400 – Power Engineering	3.6	4.1	3.5
2	BA 60710500 – Electrical Engineering	3.8	3.5	4.1
3	MA 70710410 – Energy saving and energy audit	4.3	4.8	4.7
4	MA 70710411 – Alternative energy sources	-	-	4.8

Forming Master's Dissertation and Graduate Qualification Work (for bachelors) topics

In the department, a working group consisting of professors and teachers with scientific degrees and employees of scientific institutions of the Academy of Sciences of the Republic of Uzbekistan, network research and design institutions, is formed for the formulation of Master's Dissertation and Graduate Qualification Work topics.

This working group will develop a list of topics and a set of qualifying forms of master's dissertations, including current problems of state and economic management bodies, joint-stock companies, and industrial enterprises and their solutions, ensuring competitiveness in the labor market, developing educational services, current requirements for the quality of education, and the context of the labor market. The topics of master's dissertations, as a rule, are devoted to current scientific research issues or solving specific practical tasks.

From this bank of Master's Dissertations and Graduate Qualification Work topics, talented students and masters select topics and supervisors relevant to their research interests. The head of the department approves the calendar work plan for working with their academic supervisors and conducts scientific research on the topics of the Master's Dissertation and Graduate Qualification Work based on this plan.

Scientific supervision of the master's thesis is carried out by professors, doctors of science, associate professors, candidates of science working in higher education institutions, scientists of scientific institutions of the Academy of Sciences of the Republic of Uzbekistan, highly qualified and experienced specialists of organizations, as well as foreign specialists who have master's degrees, scientific degrees or scientific titles in the prescribed manner.

If a scientific supervisor is appointed from among the non-working employees of the higher education institution where the master's student is studying, in addition to the student, a scientific advisor is appointed from among the professors and teachers of the relevant department.

In accordance with the established requirements, within the framework of the completion of the master's thesis, the same responsibility as the scientific supervisor is assigned to the scientific advisor.

The work of the scientific supervisor and scientific adviser from the staff of the higher education institution where the master's student is studying, with students on the preparation of the master's thesis, is included in the educational load determined by the personal work plan of the academic year in their higher education institution.

Payment for the work of a scientific supervisor who is not working in a higher education institution where a master's student is studying is done in accordance with the conditions of hourly payment of labor in the amount of not more than 50 hours for one master's student per academic year, within the funds provided for these purposes in the cost estimate of the relevant higher education institution.

A professor or a doctor of science can supervise up to five master's theses, as well as an associate professor, a candidate of science, and a specialist, up to three.

Subjects of master's theses of master's students presented by departments and discussed at the educational and methodological council of a higher education institution or faculty, and their scientific supervisors (scientific advisers) approved by the order of the rector of the higher education institution based on the presentation of the vice-rector for scientific affairs within the first two months of the first academic year.

Responsibilities of the scientific supervisor include:

to draw up a consultation table to systematically help with issues that may arise within the scope of the research topic;

to participate in the selection of research methods and assist the master's student in their application in research work;

to control the completion of work according to the fixed calendar work plan of the master's student and the timely preparation of the master's thesis;

to summarize the master's thesis before the initial defense.

Supervising the completion of graduate work

Leaders of graduate studies are appointed from the ranks of professors and associate professors or scientific staff of this higher education institution, highly qualified specialists of other institutions and enterprises.

Supervisor of graduate work:

- gives an assignment;
- plans the schedule of graduation qualification work;
- recommends basic literature, information, and archival materials and other sources on the subject;
- holds regular consultations with students;
- supervises the process of completion of graduation qualification work;
- corresponds to the quality and authorship of the graduation qualification work performed by the student, and does not allow topics to be returned or exactly copied from other sources.

According to the proposal of the supervisor of the graduate qualification work, the department can invite consultants for certain sections of the work at the expense of the budget of the time allocated for the supervision of the graduation qualification work.

Professors and associate professors of a higher education institution, scientific staff, and highly qualified specialists of other institutions and enterprises can be appointed as consultants (advisors) for the departments of the graduate work. Consultants check the appropriate part of the student's work and give appropriate instructions.

The specialist department develops methodological manuals for the completion of the graduation qualification work and provides them to the students, specifying the scope of the requirements for the graduation qualification work.

Preparation of Master's thesis

The preparation of the master's thesis at the university is carried out by the "Regulation on the Master's Degree" approved by the decision of the Cabinet of Ministers of the Republic of Uzbekistan dated March 2, 2015, No. 36 "On the Approval of the Regulation on the Master's Degree".

For instance:

- general rules;
- requirements for master's training;
- rights and obligations of master's students;
- organizing the educational process for the master's degree;
- general qualification requirements for teachers involved in pedagogical activities at the master's degree;
- choosing a topic and appointing a scientific supervisor;
- requirements for the structure and content of the master's thesis;
- procedure for preliminary and formal defense;
- such as monitoring the activities of master's students is covered.

Magistrates' procedures for conducting scientific research, methods, writing scientific articles, formalizing theses, forming an abstract, etc., on issues are taught in the subject "Methodology of scientific research" with two credits.

The university has a "Department for Organization of Scientific Research of Talented Students" where students submit their research proposals. This department prepares scientific developments for submission to various competitions, funds are allocated for creating industrial copies, and conferences are held with the compilation of scientific articles. Discussions of scientific seminars are organized in problematic situations.

Preparation of a master's thesis at the university for masters is carried out according to the "Regulation on the master's degree" approved by the decision of the Cabinet of Ministers of the Republic of Uzbekistan dated March 2, 2015, No. 36 "On approval of the Master's degree", the topics for the master's thesis are formed within two months ordered. Two days each week (usually Monday and Tuesday) are allocated for masters to work with academic supervisors. At the end of each semester, masters submit reports to the department on their work with the academic supervisor. 10 hours are allocated in the curriculum during the semester for the master's students to work with academic supervisors.

Procedure for assigning graduation qualification topics to talented undergraduate students

The topics of the graduation thesis for talented students of the department are given in accordance with the order of the Institute's record No. 842-T dated December 26, 2024, on approval of the topics of graduation thesis for students. The topics of the graduation thesis are given by the Department of "Energy and Electrical Technology" on a competitive basis to up to 20% of talented students in the undergraduate program. Providing graduation thesis topics to talented students in the undergraduate program will further support their research activities and help them become scientifically capable teachers in the future.

Terms, conditions, and procedures for issuing graduate qualification papers

Graduation thesis topics are given to talented students of the graduate stage, including talented students with a 4-year bachelor's education at the 1st stage, 1st semester.

Talented students selected by the department for the organization of scientific and research activities of talented students in the section of specialized departments are given graduation qualification work topics in accordance with the scientific topic of the department by the relevant departments within 1 month, and scientific supervisors are attached.

Subjects of graduation work will be examined by the expert commission organized by the Registrar's office within 5 days. In the 1st semester of the academic year, the university rector's order on approving the topics of graduation theses of talented master's students and their academic supervisors is published.

3. RESOURCES

JizPI has a material and technical base that provides all types of laboratories, disciplinary and interdisciplinary training, practical and scientific research work in accordance with the current sanitary and fire safety rules considered in the working curriculum of students. The university creates all conditions for convenient communication between students and professors by providing free access to all resources necessary for the educational process:

- people (leaders, curators, consultants),
- information (literature in the library, computers connected to the Internet),
- materials (laboratory equipment).

3.1. Staff and Staff Development

The category of pedagogic employees in a higher education institution includes persons holding the position of head of the department, professor, associate professor, senior teacher, teacher (assistant), and teacher-trainee. The position of the head of the department, professor, associate professor, senior teacher, teacher (assistant), teacher-trainee of the higher educational institution is held for a period of five years by competition.

Professors and teachers who have basic knowledge corresponding to the profile of the taught subject and systematically engage in scientific activity will have the academic degree of candidate of science (Ph.D.) and doctor of science (DSc). A person with a higher education in a relevant specialty (master's degree, specialist with a diploma) can participate in the competition for the position of teacher (assistant), teacher-intern at the department. All selected documents are reviewed in advance at the department meeting. Before reviewing the documents of persons who have not previously worked in the department, they conduct trial lectures (open trainings for teachers of this higher education institution). Subjects of test lectures and open classes should be in accordance with the requirements of the curriculum of the subject of the department. At the final stage of hiring candidates, a public council discussion is organized and candidates who receive a positive opinion are hired.

6 (22,2%) of the 27 professors working as professors in BA 60710400 – Power Engineering, BA in 60710500 – Electrical Engineering, MA 70710410 – Energy saving and energy audit, MA 70710411 – Alternative energy sources in the 2024-2025 academic year have a degree.

Special attention is paid to the development of employees in the department, and opportunities are created. Based on the academic exchange program in the academic year 2023-2024, Department of Energy and Electrical Technology teacher held lecture classes at the South Kazakhstan University named after M. Auezova. In the academic year 2023-2024, the Department of Energy and Electrical Technology teacher held lecture classes at the Seoul National University of Science and Technology. Also, three department teachers held lecture classes at the South Kazakhstan University named after M. Auezova. In addition, the department teachers completed an internship at Ege

University in Türkiye and the University of Jaen in Spain to establish and develop the scientific research in the academic years 2022-2023 and 2023-2024.

Furthermore, department professors have been attending and completing a training program on Solar panel production practice in China in the academic year 2023-2024. As well, department teachers have attended and completed a training program on electric vehicles, batteries, charging stations, and cross-border energy trading in India, at the NTPC School of Business, in the academic year 2023-2024. From 20th May to 24th May 2024, department professors held visiting lectures at the Politecnico di Torino, Republic of Italy.

At the department, conditions have been created for professors and teachers to learn foreign languages, and currently, 26% of professors and teachers have language certificates.

Table 3.1 In the last 5 years, the composition of professors and teachers of the scientific

№	Number of academic staff	DSc	PhD	Head teacher	Teacher
BA 60710400 – Power Engineering, MA 70710410 – Energy saving and energy audit					
2020-2021	22	1	2	5	14
2021-2022	22	2	2	5	13
2022-2023	22	2	2	7	11
2023-2024	21	1	3	5	12
60710500 – Electrical Engineering					
2020-2021	14	0	2	5	7
2021-2022	13	0	2	5	6
2022-2023	14	0	2	5	7
2023-2024	13	0	2	5	6
BA 60710400 – Power Engineering, 60710500 – Electrical Engineering, MA 70710410 – Energy saving and energy audit, MA 70710411 – Alternative energy sources					
2024-2025	27	1	5	8	13

To obtain the title of professor or associate professor at JizPi, one should have a Doctor of Science (DSc) or Doctor of Philosophy (PhD.), or a candidate of science degree. For this, in case of fulfilling the requirements of the "Regulation on the Procedure for Awarding Scientific Titles" approved by the decision of the Higher Attestation Commission No. 20 of 2008. On the basis of the decision No. 224/8 dated April 28, 2016, they were state registered by the Ministry of Justice of the Republic of Uzbekistan on June 3, 2016, with No. 2793, and they were awarded the scientific titles of professor/associate professor.

The academic title of Associate Professor is awarded to specialists who successfully work in an educational institution and fulfill the following general requirements:

a) have a Doctor of Science or Doctor of Philosophy degree;

b) have at least 5 years of pedagogical and scientific work experience, including 3 years of pedagogical work experience in an educational institution;

c) has successfully worked in one of the following positions: head of department, professor (acting), associate professor (acting) or senior lecturer, deputy head of department or head of department in higher military and militarized educational institutions for at least one academic year, or in one of these positions, carrying out pedagogical activities with a teaching load of at least 0.25 times the standard for one academic year (in cases of positive changes in the position, the period of work in the previous position is also taken into account);

The winners of the republican stage of the competition "The Best Pedagogist of a Higher Educational Institution" who took 1st place in each field of knowledge in the nominations have the right to submit documents to the Academic Council for the academic title of Associate Professor without exceeding the one-year term of the person performing the duties in the relevant position specified in the first paragraph of this subparagraph for 3 years;

g) after defending the dissertation, published scientific works, including at least 3 scientific articles in scientific journals (for applicants in the field of medicine, after defending the dissertation, published scientific works, including 5 scientific articles in scientific journals, including 1 article in reputable foreign scientific journals);

d) after defending the dissertation, published educational literature used in pedagogical practice, including a training or methodological manual corresponding to the educational programs of the educational institution, as well as published 1 monograph for applicants in the field of medicine;

j) the applicant working in the specialty department has supervised at least 2 master's students or 4 graduate students of the bachelor's degree program (5 master's students for applicants in the medical field) or has prepared winners or team(s) of state scholarship competitions, international or republican competitions, or competitions.

The academic title of Associate Professor may be awarded, as an exception, to highly qualified specialists who do not have an academic degree (except for specialties in the theory and history of culture and art) who meet the general and following requirements of this Regulation:

a) have a relevant higher education;

b) have at least 5 years of pedagogical and scientific work experience, including 3 years of pedagogical work experience in an educational institution;

c) has successfully worked in one of the following positions: head of department, professor (acting), associate professor (acting) or senior lecturer, deputy head of department or head of department in higher military and militarized educational institutions for at least one academic year, or in one of these positions, carrying out pedagogical activities with a teaching load of at least 0.25 times the standard for one academic year (in cases of positive changes in the position, the period of work in the previous position is also taken into account);

g) has scientific research and creative work, including at least 3 scientific articles published in scientific journals (at least 5 scientific articles for applicants in the field of medicine, of which 1 article was published in reputable foreign scientific journals);

d) educational literature used in pedagogical practice, including 1 textbook (2 in case of co-authorship) used in one of the types of education (except for the areas of culture, art, architecture, sports and physical education) and 1 textbook published as a sole author (in the absence of a textbook, a textbook published outside the established norm may also be accepted as a textbook), as well as 1 additional monograph for applicants in the field of medicine;

e) the applicant working in the specialty department has supervised at least 4 undergraduate or graduate students or has prepared winners or teams of state scholarship competitions or international or republican olympiads or competitions.

The academic title of Professor is awarded to specialists who successfully work in an educational institution and fulfill the following general requirements:

a) have a doctorate degree;

b) have an academic title;

c) have at least 10 years of pedagogical and scientific work experience, including 5 years of pedagogical work experience in an educational institution;

g) has successfully worked in the position of head of department, professor (acting), deputy head of department or head of department in higher military and militarized educational institutions for at least one academic year, or in one of these positions, performing pedagogical activities with a workload of at least 0.25 times the standard academic load during one academic year, as rector (director, head), vice-rector (deputy director, deputy head), scientific secretary, head of the educational and organizational structure (faculty, department) of an educational institution (in cases of positive changes in the position, the period of work in the previous position is also taken into account);

The winners of the republican stage of the competition "The Best Pedagogist of a Higher Educational Institution" who took 1st place in each field of knowledge in the nominations have the right to submit their documents to the Academic Council for the academic title of professor without exceeding the one-year term of the person performing the duties in the relevant position specified in the first paragraph of this subparagraph for 3 years;

d) trained a highly qualified specialist with a scientific degree or supervised 10 master's students and 5 graduate students of the bachelor's degree program (for applicants in the field of medicine, trained 3 highly qualified specialists with a scientific degree and 5 master's students or winners of state scholarship competitions or international, republican olympiads or competitions);

e) after the defense of the dissertation, published scientific works, including at least 5 articles in scientific journals, of which 2 articles in reputable foreign scientific journals (for applicants in the medical field, published scientific works, including 10 articles in scientific journals, of which 2 articles in reputable foreign scientific journals); j) after the defense of the dissertation, published educational literature used in pedagogical practice, including 1

textbook used in one of the types of education (2 in case of co-authorship) or 2 textbooks corresponding to the educational program of the educational institution (if the textbook is insufficient, a textbook published outside the established standard may also be accepted as a textbook), as well as 1 additional monograph for applicants in the medical field.

The academic title of Professor may be awarded, as an exception, to specialists who successfully work in an educational institution and fulfill the following general requirements:

a) have a Doctor of Philosophy, Candidate of Science, or Doctor of Philosophy or other equivalent academic degree awarded in foreign countries (hereinafter referred to as Doctor of Philosophy);

b) have an academic title;

c) have at least 10 years of pedagogical and scientific work experience, including 5 years of pedagogical work experience in an educational institution;

g) has successfully worked in the position of head of department, professor (acting), deputy head of department or head of department in higher military and militarized educational institutions for at least one academic year, or in one of these positions, performing pedagogical activities with a workload of at least 0.25 times the standard academic load during one academic year, as rector (director, head), vice-rector (deputy director, deputy head), scientific secretary, head of the educational and organizational structure (faculty, department) of an educational institution (in cases of positive changes in the position, the period of work in the previous position is also taken into account);

d) has prepared a highly qualified specialist with a scientific degree and has supervised at least 2 master's students or has supervised 10 master's students and 5 bachelor's degree graduates or has prepared winners of state scholarship competitions or international, republican Olympiads or competitions (for applicants in the field of medicine, has prepared 3 highly qualified specialists with a scientific degree and has prepared 5 master's students or state scholarship competitions or international, republican Olympiads or competitions);

e) has published scientific works after the defense of the dissertation, including at least 5 scientific articles in scientific journals, including 2 scientific articles in prestigious foreign scientific journals and a monograph as a sole author;

j) educational literature used in pedagogical practice, including 1 textbook used in one of the types of education after the defense of the dissertation (2 in the case of co-authorship) and 3 textbooks published by the educational institution as a single author corresponding to the curriculum (if the textbook is insufficient, a textbook published outside the established standard may also be accepted as a textbook).

JizPI professors and teachers participate in professional development and retraining courses online (2 months) or offline (1 month) every 3 years.

During 2022-2025, 28 professors-teachers improved their qualifications and completed internships in the republic and foreign countries, actively

working to establish international cooperation and scientific relations with foreign countries.

Table 3.2. List of professors and teachers who have advanced their qualifications and completed internships in the republic and abroad in 2022-2025

Academic years	In foreign countries:		The number of participants in training programs in the republic
	Number of participants in training programs	Number of participants in internship programs	
2022-2023	3	3	6
2023-2024	2	1	8
2024-2025	0	0	5

Table 3.3. Information about academic staff with a scientific degree from the Department of Energy and electrical technology

	Full name	Academic degree	Scientific title	Specialty code	Dissertation topic
1	Yuldashev Urishbay	Doctor of Physical and Mathematical Sciences	Professor	01.04.07 Physical and mathematical sciences	Study of alkaline earth crystals using gamma-resonance spectroscopy and standing X-rays
2	Abdullaev Elnur Akhmatovich	PhD in Technical Sciences	Associate professor	05.05.02 Technical sciences	Optimization of load schedules of enterprises with renewable energy sources
3	Parsokhonov Abdulkobi Gafurovich	PhD in Physical and Mathematical Sciences	Associate professor	01.04.07 Physical and mathematical sciences	Emission Mössbauer spectroscopy of fluorites CaF2, BaF2, SrF2, and MgF2 diffused with Co57 impurity atoms.
4	Nazarov Furkat Daminovich	PhD in Technical Sciences	Senior lecturer	05.01.06 Technical sciences	Multiphase electromagnetic current-to-voltage converters for control systems
5	Anarbaev Mukhiddin Almanovich	PhD in Technical Sciences	Senior lecturer	05.01.06 Technical sciences	Electromagnetic current-to-voltage transducers with advancd functionalitu for reactive power control
6	Akmedov Erkin Rakhmanovich	PhD in pedagogical sciences	Associate professor	13.00.05 Theory and methodology of vocational education	Improving the methodology of teaching general vocational subjects using virtual educational technologies (on the example of technical higher education institutions)

Table 3.4 Dynamics of salary growth of university teaching staff in the last 5 years

Position	2020 (1 EURO = 12786,03 sums)	2021 (1 EURO = 2224,88 sums)	2022 (1 EURO = 11908,73 sums)	2023 (1 EURO = 13651,87 sums)	2024 (1 EURO = 14 140,83 sums)	2025 (1 EURO = 14 140,83 SUMS)	
						EURO	SUMS
Head of the department							
Doctor of Science or Doctor of Science degree or other equivalent scientific degrees of foreign countries or the scientific title of professor	7,042,200	7,535,154	9,117,536	10,211,640	11,691,307	997,86	14146482
candidate of science or doctor of philosophy (Ph.D.) degree or other equivalent degrees of foreign countries or docent academic title	6,606,600	7,069,062	8,553,565	9,579,993	10,968,135	936,14	13271444
does not have a scientific degree or academic title	5,826,150	6,233,981	7,543,117	8,448,291	9,672,448	825,55	11703662
Professor:							
Doctor of Science or Doctor of Science degree or other equivalent scientific degrees of foreign countries or the scientific title of professor	6,715,500	7,185,585	8,694,558	9,737,905	11,148,927	951,57	13490202
candidate of science or doctor of philosophy (Ph.D.) degree or other equivalent degrees of foreign countries or docent academic title	6,316,200	6,758,334	8,177,584	9,158,894	10,486,018	894,99	12688082
Doctor of Science or Doctor of Science degree or other equivalent scientific degrees of foreign countries or the scientific title of professor	6,025,800	6,447,606	7,801,604	8,737,796	10,003,903	853,84	12104722
Docent:							
Doctor of Science or Doctor of Science degree or other equivalent scientific degrees of foreign countries or the scientific title of professor	5,680,950	6,078,617	7,355,127	8,237,742	9,431,391	804,98	11411983

candidate of science or doctor of philosophy (Ph.D.) degree or other equivalent degrees of foreign countries or docent academic title	5,317,950	5,690,207	6,885,151	7,711,369	8,828,747	753,54	10682784
does not have a scientific degree or academic title	4,755,300	5,088,171	6,156,687	6,895,489	7,894,645	673,82	9552521
Senior teacher:							
has a scientific degree and a scientific title	4,954,950	5,301,797	6,415,175	7,184,996	8,226,102	702,11	9953583
has a scientific degree or academic title	4,664,550	4,991,069	6,039,194	6,763,897	7,743,986	660,96	9370224
does not have a scientific title or a scientific degree	4,265,250	4,563,818	5,522,220	6,184,886	7,081,076	604,38	8568102
Assistant, teacher							
has a scientific degree and a scientific title	4,374,150	4,680,341	5,663,213	6,342,799	7,261,871	619,81	8786864
has a scientific degree or academic title	4,083,750	4,369,613	5,287,231	5,921,699	6,779,753	578,66	8203501
does not have a scientific title or a scientific degree	3,793,350	4,058,885	4,911,251	5,500,601	6,297,638	537,51	7620142
Trainee teacher	**3,357,750**	**3,592,793**	**4,347,279**	**4,868,952**	**5,574,464**	475,79	6745101

3.1.1. Involvement of foreign professors and teachers in the educational process.

International cooperation

The 2nd year students of the Department of Energy and Electrical Technology were given 12 hours of training each by the chief engineers of the Russian Federation company "OOO NPP RU Engineering", G. Reznichenko and A. Lazukov.

The Department of Electrical Technology is conducting international cooperation with the Ege University of Turkey and the Polytechnic University of Turin of Italy, which are among the 1000 most prestigious higher education institutions in the world. In June 2022, the department's professors Abdullaev Elnur, Mirzayev Uchkun, and Khudoyberdiev Umid gave lectures to undergraduate students of Ege University. In May 2024, the department's professors Abdullaev Elnur and Anarboyev Mukhiddin each gave lectures to undergraduate students of Turin Polytechnic University for 8 hours (Certificates are attached).

Leading scientists and professors of foreign higher education and scientific organizations are also involved in the educational process. The involvement of foreign professors in the educational process allows:

- cooperation in the development of relations;
- from modern science and educational achievements to higher education;
- preparation and printing of co-authored educational literature, manuals;
- involvement of foreign professors and students in the educational process;
- conducting scientific research in cooperation.
- Information about foreign professors and teachers involved in the educational process is presented in Table 3.5.

Table 3.5 Information about foreign professors and teachers involved in the educational process

	Name	**Country and workplace**	**Speciality**	**The subject at the HEI**	**Depatment**	**Year**
1	Shayxullina Raviya Masgutovna	Russian Federation. Kazan Federal University	Candidate of Physical and Mathematical Sciences	Physics	Energy and electrical technology	2022
2	Yakimenko Igor Vladimorovich	Russian Federation. Moscow Energy Institute	Doctor of Technical Sciences, Associate professor	Theoretical electrical engineering	Energy and electrical technology	2024

3	Cuddapah Dhananjaya Rao	India. Sambhram Institute of Technology	Doctor of Philosophy in Physical Sciences	Theoretical electrical engineering	Electrical technology	2024
4	Lazukov Aleksei Stanislavovich	Russian Federation. LLC NPP "RU-Engineering"	Chief Engineer	Theoretical electrical engineering	Energy and electrical technology	2025
5	Reznichenko Gennadii Vladimirovich	Russian Federation. LLC NPP "RU-Engineering"	Chief Engineer	Automatic control theory	Energy and electrical technology	2025

3.2. Student Support and Student Services

The institute has established a comprehensive support system for students. In particular, the Department of Youth Work, Spirituality and Enlightenment has been established. This department is aimed at promoting human rights and values among students, building a national idea and a national program for personnel training, and educating a physically healthy, spiritually mature, deeply thinking, and independent-minded person. It implements a long-term, large-scale spiritual and moral education program. Based on the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 412 dated September 30, 2021 “On measures to increase the effectiveness of spiritual and educational work in the higher education system,” tutoring activities have also been established at the institute.

The Student Movement Coordination Sector, established under the Registration Department, is engaged in solving problems related to the educational process, providing students with any necessary documents, issuing academic leave, certificates, and transcripts, providing information support to students in contacting the center, and providing archival references. The sector also performs a number of tasks, such as issuing duplicate diplomas and applications, and providing references from the place of study. The main goal of student services is to ensure that students have the necessary and useful experience at the institute. This department is designed to provide students with quick and effective administrative support, and they can send their feedback, including problems, requests, and teacher evaluations, to the institution. and is the main point of contact for students who can express their praise.

Financial support for students, funds allocated to them

Status of placement in the student dormitory in JizPI

Organization of "Student League" and "Five Initiatives Olympiad" and Student participation

In the 2024-2025 academic year, 300 students of the Institute's Faculty of Power Engineering were accommodated in the Institute's Student Dormitory No. 1-2. The living conditions of students living in rented accommodation were constantly monitored by 3 tutors, and a single database was created for them.

The rector of the institute awarded 51,788,000 soums to 100 students in June 2024 on the occasion of the “Kurban Hayiti” holiday, 4,143,040 soums to 2 students who actively participated in spiritual and educational, sports events and public works in October, 14,500,640 soums to 14 members of the “Shield” team in October, 26,411,880 soums to 51 students in November on the occasion of the “November 17 International Students' Day”, 6,991,380 soums to 9 students who won the best creative works (poems, essays, drawings, etc.) on the topics “How do I understand terrorism?”, “Enlightenment against ignorance”, “Let's be a generation worthy of our ancestors” in November, 16 students who won the “Student of the Year” competition held in November were awarded 39,000,000 soums, 24 students who participated in the “Cockfight”, “Tug of War”, “Riding a Donkey” national sports and folk games held at the institute in November were awarded 8,000,000 soums, 101 students with disabilities were awarded 52,305,880 soums in December on the occasion of “December 3 – Disabled People’s Day”, and 12 students who won the “Student Run” volunteer running competition in December were awarded 12,429,120 soums.

During the 2024-2025 academic year, a total of 329 students were awarded funds in the amount of 215,569,940 soums at the institute.

Students of the Faculty of Power Engineering are actively participating in the “Student League” and the “Five Initiatives Olympiad”.

654 students of the Faculty of Power Engineering were involved in mini-football, volleyball, table tennis, athletics, and streetball sports within the framework of the “Five Initiatives Olympiad”.

In the 2023-2024 academic year, the Department of “Power Engineering and Electrical Engineering” of the Faculty of Power Engineering became the laureate of the Abdugafforov Nurbek Beruniy State Scholarship.

Table 3.6. Table of information about students with official and national certificates studying at the Department of Energy and Electrical Technology of JizPI.

№	Full name	Year	Group	language certificate	Certificate type	Level	Date recieved
1	Rajabov Shavkat Azamat o‘g‘li	4	401-20 EE	English	IELTS	6	01.12.2022
2	Risqulova Gulshoda Hamdamqul qizi	4	410-20 EE	English	CEFR	B2	14.12.2023
3	Ummatov Jahongir Mamayunus o‘g‘li	4	402-20 EE	English	IELTS	5	16.06.2024
4	Khamzayeva Iroda Ziyadulla qizi	4	401-20 EE	English	CEFR	B2	25.04.2024
5	Kamoliddinov Behzod Kamoliddin o‘g‘li	4	402-20 EE	English	CEFR	C1	19.03.2025
6	To‘rayev Umarxon	4	402-21 EE	English	CEFR	B1	20.06.2024
7	Yo‘ldoshova (Bahodirova) Sevinch	4	411-21 EEE	English	CEFR	B2	25.04.2024
8	Muhammadiyev Navro‘zbek	4	412-21 EEE	English	CEFR	B1	15.05.2024
9	Usmonov Askar O‘ktam o‘g‘li	4	412-21 EEE	Korean	OFFICIAL TOPIK SCORE	TOPIK I Level 2	14.04.2024

					REPORT		
10	Abduvohidova Zarina Erkin qizi	4	410-21 EE	Turkish language	CEFR	B2	02.05.2025
11	Narzullayev Abdulloh Jamshid o‘g‘li	4	402-21 EE	English	CEFR	B1	202.05.2025
12	To‘lqinov Ilhom	4	441-21 E	English	CEFR	B2	10.01.2024

Table 3.7 University student support and student services

№	Year	Number of students placed in the University Dormitory	Funds allocated to students in need of social protection (million soums).	Support for talented young people (famous scholarship, five initiative Olympiads of the Republic) competitions (million soums)	Volunteer students (million soums).	Winners of sports competitions (million soums).
		Faculty of Power Engineering	Faculty of Power Engineering	Faculty of Power Engineering	Faculty of Power Engineering	Faculty of Power Engineering
1.	2021	96	13	9	2	8,2
2.	2022	105	14	11	2,5	12,9
3.	2023	286	13,5	12	4	13,4
4.	2024	297	17	8	1,5	6,2
5.	2025	220	6	3,6	1	

3.3. Funds and equipment

Financial resources and available equipment form a stable basis for the implementation of the educational process. Today, the departments have a modern material and technical base for high-quality organization of practical and laboratory classes.

According to the decision of the President of the Republic of Uzbekistan No. PQ-2909 of April 20, 2017, "On measures to further develop the higher education system", laboratory equipment and all facilities were supplied at a cost of more than 100,000 dollars in total. “Transformer 0.3 kW” educational laboratory stand, “Induction machine 0.3 kW” educational laboratory stand, “AC machines 0.3 kW” training laboratory stand, “Synchronous machine 0.3 kW” training laboratory stand, and others are provided.

Since 2024, the teachers of the Department of Energy and Electrical Technology have been working within the framework of the European Union's ERASMUS+ CBHE program project No. 101128871-DEBSEUz-ERASMUS-EDU-2023-CBHE entitled “Development of the targeted Educational program for Bachelors in Solar Energy in Uzbekistan (DEBSEUZ)”. As a result, the university was allocated 60,000 US dollars within the framework of this project. Today, the Department of Energy and Electrical Technology operates a scientific

and practical center for research into alternative energy sources. Various enterprises and organizations are concluding business contracts for the installation of solar panels manufactured in this center. Through the concluded business contracts, 921 000 000 soums were transferred to the institute's account in the 2024-2025 academic year.

Table 3.8 Laboratory equipment in the Department of Energy and Electrical Technology

№	Equipment and equipment name	Model	Amount
1	“Transformer 0.3 kW” educational laboratory stand	E2.2.1.3	1
2	“Induction machine 0.3 kW” educational laboratory stand	E2.2.4 775 200 EN	1
3	“AC machines 0.3 kW” training laboratory stand	E2.2.3 775 195 EN	1
4	“Synchronous machine 0.3 kW” training laboratory stand	E2.2.5 775 205 EN	1
5	"DC machines 0.3 kW" educational laboratory stand	E2.2.2	1
6	"ELM Basic Machines for Extra Low Voltages" training and laboratory stand	T2.5	1
7	EPH 2 leading solar laboratory		1
8	Automation Basics	RU-DRIVE CCS 05.121.071	2
9	Automation and control devices	RU-DRIVE CCS 05.122.054	2
10	Pumping stations with a SCADA system	RU-DRIVE CCS 05.123.220	1
11	Programmable relay	RU-DRIVE CCS 05.124.018	1
12	Mechatronics	НТЦ-26.01	1
13	Control and measuring instruments and automation	КИПИА-СК	1
14	Automatic process control system	RU-DRIVE CCS 05.127.89	1
15	Automation of pumping stations	RU-DRIVE CCS 05.128.122	1
16	Industrial robot CR5	Dobot	1
17	Fundamentals of digital technology	НТЦ-02.85	1
18	Installation and configuration of automation systems		1
19	Fundamentals of Electronics and Circuit Engineering	ЭЛБ-241.146.01	1
20	Arduino kit	Complete set ARDUINO	14

Library resources

Availability of computers in the information resource center (library). the number of seats in the halls.

The information resource center has a solid material and technical base. Currently, IRC (information recourse center) has 37 computers, of which 12 are

working computers, and the remaining 25 are serving users. Also, 4 printers. IRC has a Wi-Fi zone with a speed of 100/1000 Mbit/s. All computers in the information resource center are connected to the INTERNET network, the speed of which is of 100/1000 Mbit/s.

The Department of Electronic Information Resources operates in the ARM building, which is equipped with two computer rooms with 25 seats (the number of seats in the first hall is 18, the number of seats in the second hall is 7).

In order to create comfortable conditions for users in the ARM, a number of measures have been developed to strengthen the material and technical base, provide them with the necessary equipment, improve the conditions of classrooms, and modernize them: in the classroom - 32, in the scientific and methodological department - 10, in the student dormitory - 32, in the library located in the 3rd building of the Faculty of Industrial Technologies - 60, total user capacity - 152.

The ARM electronic library https://lib.jizpi.uz/ platform has 28617 items (in PDF format) (of which 27518 are textbooks and study guides for subjects, 70 scientific literature, 1029 sources of fiction literature.

The electronic form of all books available in ARM and new literature are regularly uploaded to the platform of the unified electronic library information system of higher education institutions https://unilibrary.uz/.

In order to form the database of the platform https://unilibrary.uz/, the electronic form of textbooks and study guides prepared by the professors and teachers of the institute is being entered and made available to users.

The moderators checked the errors and shortcomings of the literature posted on the platform of the Jizzakh Polytechnic Institute and transferred it to active status.

In order to fully meet the educational needs of users, ARM is located far from the main educational building (Faculty of Industrial Nechnologies) and in the student dormitory networks have been established. These branches are also provided with the necessary literature and necessary equipment, computers.

In accordance with the resolution of the Decree No. PQ-3271 “On the development of the system of publishing and distributing book products, the development and promotion of the culture of reading and reading”, a number of works have been carried out by the IRC to establish the provision of literature to users that was refused. In particular, cooperation agreements have been concluded with the libraries of Jizzakh State Pedagogical University, Sh. Rashidov Regional Information and Library Center, Jizzakh Regional Special Library for the Blind, Jizzakh Regional Methodological Center, and 19 general secondary education schools.

Table 3.9 List of Information Communication Technology tools of JizPI

Computers total				The number of installed Wi-Fi devices	Auditoriums equipped with projectors	Auditoriums equipped with smart boards
	computers used in the educational process	computers connected to the internet	outdated and unusable computers			
840	397	680	94	59	67 (77)	12
840	397	680	94	59	67 (77)	12

Note: (77) SMART TVs are also being used in the educational process.

Access to international scientific databases

In accordance with the Resolution of the President of the Republic of Uzbekistan No. PQ-307 dated July 6, 2022 “On Approval of the Strategy for Innovative Development of the Republic of Uzbekistan for 2022-2026”, higher educational institutions in the republic were granted the right to use the international scientific platforms “Web of Science”, “Link Springer” and Science Direct. The Ministry of Higher Education, Science and Innovation has reached a temporary agreement with these organizations on the use of these international scientific platforms on the territory of Uzbekistan.

4. TRANSPARENCY AND DOCUMENTATION

4.1. Module descriptions

The curriculum of the educational program is formed on the basis of the credit-module system and is developed in accordance with the requirements for professional competences, which ensures that students acquire the necessary knowledge, skills and qualifications in their professional activities. Disciplines in the curriculum can be classified as follows:

1. Compulsory disciplines (according to a logical continuum):

- Logically continuous disciplines are a set of disciplines that complete each other in a logical sequence. In this case, the student's failure to receive credit from the previous discipline may result to the student not being admitted to classes in the discipline that is the next logical continuation.

- Particular disciplines – continuous disciplines that serve to form professional competencies in a job. In this case, the student's failure to get credit in these disciplines allows him to continue studying at the next level if the student's mastery points in other disciplines are sufficient in terms of GPA.

2. Elective Subjects

Elective Subjects in specialty – a set of disciplines that serve to provide additional knowledge on in-depth disciplines depending on their specialty and to expand the necessary competencies for their direct specialty. At least 80% of the total elective hours may be allocated to these disciplines.

- Subjects focused on personal interest - disciplines aimed at supporting the student's personal interests, creative approaches and talents, regardless of the program of study chosen by the student. No more than 20% of the hours allocated to optional disciplines can be allocated to these disciplines.

3. Qualification practice.

The following qualification practices are performed in the preparation of bachelors:

Starting from the 2024/2025 academic year, weekly training sessions for 3rd-4th year students of higher educational institutions that train engineers in the form of full-time education will be held according to the "5+1" system, including 5 days at a higher educational institution and 1 day of internship at production enterprises and organizations.

Today, practice contracts have been signed with organizations such as the Jizzakh regional branch of the Regional Electric Networks Joint Stock Company, the Jizzakh main electric network branch of the National Electric Networks of Uzbekistan Joint Stock Company, Sh. Rashidov Agricultural Combine LLC, Transformer Electric Energy LLC, and Kaliya Technical Service LLC on the basis of mutual agreement;

- “5+1” internship is organized by a higher educational institution, starting from the third year, based on a systematic internship program developed in accordance with the academic (staff training) curricula of undergraduate education areas and approved in agreement with the host organization.

Other types of qualification practices can be used according to the specific characteristics of the educational specialties.

The curriculum for master's specialties is formed on the basis of the credit-module system and is developed in a way that ensures students' mastery of compulsory and elective disciplines, scientific practice (internship) in accordance with the requirements for professional competences. As a result, the student acquires the necessary knowledge, skills and competences in his/her professional career.

Disciplines in the curriculum for master's degree programmes are classified as the same as those for bachelor's degree programmes.

Requirements for preparation and defense of research work and master's dissertation: Forming practical skills of independent research activities, conducting scientific research using modern information technology tools, analysis and reflection of research results, formation of knowledge and skills in preparation of scientific articles, it is necessary for students to be able to apply information bases based on the latest achievements of science, technology and technology in the field, to use them in the completion of a master's dissertation.

All disciplines are regularly enriched by using scientific and educational achievements. At the same time, all disciplines serve to form qualifications and skills that students should acquire in the field of education and master's specialties.

Scientific practice in the preparation of masters is held in the 4th semester. It should include conducting scientific research in the field, deepening theoretical and practical knowledge; familiarization with modern techniques and technologies in science, industry and other sectors; formation of practical, professional and scientific research competencies relevant to the field; ensuring opportunities for effective adaptation to the profession. This involves the implementation of the educational process schedule of the master's student sent for experimental scientific practice on the basis of an individual schedule.

Sample module for the degree program 60710400 – Power Engineering

CURRICULUM OF Introduction to the Specialty
Autumn semester
Module-6

Responsible for the subject/module:
M. Y. Khasanov - JizPI, assistant teacher of the department "Energy and electrical technology".

Lectures
Topic 1. The Role of Energy in Uzbekistan and Prospects for the Development of the Electric Power Sector.
Topic 2. The Role of Energy in Technological Progress
Topic 3. Processes of Utilizing Energy Resources
Topic 4. Non-Renewable Energy Sources

Topic 5. Unconventional Renewable Energy Sources
Topic 6. Thermal Power Plant and Combined Heat and Power Plant (TPP and CHP)
Topic 7. Nuclear Power Plant (NPP) and Hydroelectric Power Plant (HPP)
Topic 8. Solar Power Plants (SPP)
Topic 9. Wind Power Plants (WPP)
Topic 10. The Electric Power Sector and Energy System
Topic 11. Electric Motors and Generators
Topic 12. Energy and the Environment

Topics of practical training

1. Coulomb's Law and Problem Solving Related to It
2. Faraday's Law and Problem Solving Related to It
3. Parallel and Series Connections of Capacitors and Problem Solving Related to It. Parallel and Series Connections of Solar Modules and Problem Solving Related to It
4. Ohm's Law for a Part of an Electric Circuit and Problem Solving Related to It
5. Ohm's Law for the Entire Circuit and Problem Solving Related to It
6. Electric Current in DC Circuits and Problem Solving Related to It
7. Voltage in DC Circuits and Problem Solving Related to It
8. Electric Conductors and Problem Solving Related to It
9. Parallel and Series Connections of Resistors and Problem Solving Related to It. Parallel and Series Connections of Motors and Problem Solving Related to It
10. Kirchhoff's First Law and Problem Solving Related to It
11. Kirchhoff's Second Law and Problem Solving Related to It
12. Joule–Lenz Law and Problem Solving Related to It
13. Law of Electromagnetic Induction and Problem Solving Related to It
14. Electric Current, Electrical Power, and Efficiency (COP) and Problem Solving Related to It.
15. Alternating Current Circuits and Problem Solving Related to It

References:

1. Mulukutla S. Sarma. Introduction to Electrical Engineering. 2001, Oxford University Press. - 869 p. (The Oxford series in electrical and computer engineering)
2. Karimov R.Ch., Rafiqova G.R., Usmonov E.G., Rozinazarov M.R. *Introduction to the Specialty*. Lecture Notes. – Tashkent: TSTU Publishing House, 2018.
3. Qodirov T.M., Alimov H.A. *Electric Power Supply of Industrial Enterprises*. Textbook. – Tashkent: TSTU Printing House, 2006.
4. Majidov T.Sh. *Unconventional and Renewable Energy Sources*. Textbook. – Tashkent, 2014.
5. Taslimov A.D., Rasulov A.N., Usmonov E.G. *Electric Power Supply*. Textbook. – Tashkent: “Ilm Ziyo” Publishing House, 2012.
6. John Twidell and Tony Weir. Renewable Energy Resources // Taylor and Francis Group. LONDON AND NEW YORK, 2006.
7. Renewable Energy // ICAR e-Course For B.Sc (Agriculture) and B.Tech (Agriculture)
8. Li Zhang “Electricity Generation by Wind Power Conversion”. 2003 y.
9. Yuldoshev I.A., Sultonov M.Q., Yuldashev F.M. *Solar Energy*. Textbook. – Tashkent, 2022.
10. Mustafaqulova G.N., Toirov O.Z., Bekishev A.Y. *Electrical Machines: Practical Exercises*. Study Guide, Tashkent, 2022.

Sample module for the degree programm 60710500 – Electrical Engineering

CURRICULUM OF ELECTRICAL MACHINES
Spring semester
Module-1

Responsible for the subject/module:
A.S.Saodullayev - JPI, senior lecturer of the department " Energy and electrical technology"

Lectures
Topic 1. Introduction to the science of "Electrical Machines". Physical processes occurring in transformers.
Topic 2. Magnetic cores of transformers and the structure of magnetic cores. Electromagnetic processes occurring in no-load and short-circuit modes of a transformer.
Topic 3. Electromotive force and currents in transformer windings. Conversion of the electrical parameters of the secondary winding of a transformer to the number of windings of the primary winding.
Topic 4. Transformer T-shaped switching schemes and vector diagrams.
Topic 5. External characteristics of transformers. Voltage adjustment.
Topic 6. Transformer winding connection groups. Parallel connection conditions.
Topic 7. Parts and diagrams of the stator winding of alternating current machines.
Topic 8: Magnetic forces and magnetic fields. Pulsating, elliptical, and circular rotating magnetic fields.
Topic 9. Types of asynchronous machines, their structure and operating principle.
Topic 10. Operating modes of an asynchronous machine.
Topic 11. Electromagnetic process occurring in an asynchronous machine with a braked rotor.
Topic 12. Adapting the rotor winding parameters to the number of stator windings.
Topic 13. Obtaining experiments on the operation and short circuit of induction motors.
Topic 14. Vector diagrams of an induction machine.
Topic 15. Energy diagram of an induction machine.
Topic 16. Electromagnetic (rotating) torque and mechanical characteristics of an induction machine.
Topic 17. Induction motor operation description. Starting an induction motor.
Topic 18. Adjusting the rotation frequency of an induction motor.

Topics of practical training
1. Determination of the main parameters of a single-phase toroidal transformer.
2. Determining the connection group of single- and three-phase transformer windings.
3. Determination of the salt and short operating parameters of single-phase toroidal and Scott transformers.
4. Determining the voltage drop of a transformer operating under load. Determining the parameters of autotransformers.
5. Calculating the transformer's efficiency based on its power.
6. Checking the conditions for parallel connection of transformers.
7. Starting an asynchronous motor using an additional resistor.
8. Determination of parameters of a repulsion electric motor.
9. Solving problems related to methods for adjusting the rotation frequency of an asynchronous motor.
10. Determining the parameters of capacitor electric motors.
11. Calculation of the working and starting capacitor capacities for connecting a three-phase asynchronous motor to a single-phase network.
12. Calculation of parameters of short-circuited motors with a Dalander chain.

Laboratory topics.
1.Conduct experiments with single-phase toroidal transformers and Scott transformers.
2. Experiments with a single-phase autotransformer.
3. Conduct experiments with a three-phase transformer.
4. Experiment with a 400/690 V short-circuited asynchronous motor. Experiment with a 230/400 V short-circuited asynchronous motor.
5. Conducting an experiment with a capacitor-start electric motor.
6. Check the operating and load characteristics of a synchronous generator. Check the external and adjustment characteristics of a synchronous generator.

References:
1. Salimov J.S., Pirmatov N.B. Electric machines.– T.: Publishing house of the National Society of Philosophers of Uzbekistan, 2011. –408 p.
2. Mustafakulova G.N., Toirov O.Z., Bekishev A.E. Electric machines. Tashkent.: Tafakkur Avlod. 2020. 191 p.
3. Majidov S. Electric machines and electric drive. - T.: O'qituvati, 2002. -358 p.
4. S. K. Sahdev/Electrical Machines/ © Cambridge University Press 2018
5. Testing of Power Transformers under participation of ° Carlson Ake Jitka Fuhr Gottfried Schemel Franz Wegscheider 1st Edition published by Pro Print GmbH, Düsseldorf ISBN 3-00-010400-3-2003.
6. Alimkhodzhayev K.T., Pirmatov N.B., Ziyokhodzhayev T.I. Electric machines. - T.: "Science and technology", 2018. -344 p.
7. Alimkhodzhayev K.T., Pirmatov N.B., Ziyokhodzhayev T.I., Mustafakulova G.N. Operation of electric machines and transformers. - T.: "Science and technology", 2019. -240 p.
8. Kopylova I.P. Elektricheskie mashiny: Uchebnik dlya bachelor - Moscow:. Yurayt, 2012. – 675 p.
9. Ivanov - Smolensky A.V. Electric car. V 2-x t. Uchebnik dlya vuzov.– M.: Izd-voMEI, 2004. Tom. 1 – 652 p, Volume 2 – 532 p.
10. Salimov J.S., Pirmatov N.B., Bekchanov B.E. Transformers and autotransformers. T.: "VEKTOR-PRESS", 2010.-224 p.
11. N.B. Pirmatov, A.S. Saodullaev, A.Y. Bekishev, N.A. Qurbonov "Electric machines" textbook Ministry of Higher and Secondary Specialized Education of the Republic of Uzbekistan. – Tashkent: "ZEBO PRINT" publishing house. 2022.-197 p.

Sample module for the degree programm 70710410 – Energy saving and energy audit

CURRICULUM OF ENERGY MANAGEMENT
1st semester / autumn semester / 1 module
Module 1

Responsible for the subject/module:
Abdullaev Elnur., Jizzakh Polytechnic Institute.

Lectures
Topic 1 Relevance of energy consumption issues.
Topic 2. Energy management system.
Topic 3. Enterprise as an energy circulation system.
Topic 4. Energy flows of production.
Topic 5. Assessment of employee labor costs.
Topic 6. Dynamic energy capacity and its recession.

Topic 7. Factors affecting energy consumption of the enterprise.
Topic 8: Energy consumption of the enterprise depending on the volume of production.
Topic 9. Providing data for analysis.
Topic 10. Enterprise energy management system databases.
Topic 11. The content of the database of the enterprise's energy management system
Topic 12. Main components of energy management and stages of development.
Topic 13. Encouraging the employees of the enterprise in the field of energy saving.
Topic 14. Development of energy saving measures.

Topics of practical training
1. Calculation of electrical energy consumption.
2. Energy balance of industrial enterprises.
3. Issues of energy saving by compensation of reactive power in industrial enterprises.
4. Tariffs for heat and electrical energy.
5. Calculation of energy savings by using non-traditional energy sources in the energy supply of consumers.
6. Calculation of the amount of payment according to the forms of consumed energy.
7. The procedure for drawing up documents for connecting consumers to electricity networks.
8. Rights and obligations of electricity consumers.
9. Discounts and increases in electricity tariff for reactive energy compensation.
10. Calculation and selection of cross-sectional areas of overhead lines and cables.
11. Calculation and selection of the number and power of transformers.

References:
1. Law of the Republic of Uzbekistan “On electric energy”. Received June 24, 2009.
2. International standard ISO 50001. Energy management systems. Requirements and instructions for use. - SPb., 2011.
3. State standard ISO 50001-2012. Energy management systems. National norm. Requirements and ISO 50001: 2011. Guidance on the application of energy management systems - Requirements with an Operation Guide (IDT).
4. Makoklyuev, BI Energiya iste‘molini tahlil qilish va rejalashtirish. M.: Energoatomizdat, 2008. 296 b.
5. Chuvilkin, A.V., Gordeev A.S. Sun’iy neyron tarmoqlardan foydalangan holda ob’ektlarning quvvat sarfini bashorat qilish // Zamonaviy fan va amaliyot savollari. 2008-yil. № 2 (12). Bb. 32-37.
6. Anarboyev A. I., Qodirov D. B. Energiya auditi. Study guide, TIQXMMI, 2023. 187 b.
7. Energy audits. Practical guide for more energy efficient business.
8. General Aspects of Energy Management and Energy Audit.

Sample module for the degree programm 70710411– Alternative energy sources

“HARVESTING ENERGY FROM ALTERNATIVE ENERGY SOURCES”
Spring Semester
Module-1
Responsible for the subject/module:
M. Anarboyev - JizPI, associate professor of " Energy and Electrical Technology " department doctor of technical sciences,(Ph.D)
Lectures
Main theoretical part (lectures)

Subject content topics:
Topic 1. Introduction to the science of designing and preparing for operation the installation of energy devices based on Alternative energy sources. Basic concepts, terms and quantities.
Topic 2. Power supply of decentralized consumers.
Topic 3. Constructions of photovoltaic cells.
Topic 4. Electrical safety requirements for photovoltaic batteries.
Topic 5. Requirements for photovoltaic battery components.
Topic 6. Charge-discharge controllers and inverters in photovoltaic systems.
Topic 7. Replacement, maintenance and acceptance of devices in decentralized power supply systems.
Topic 8. Design of hot water supply for a house with a capacity of 400-600 l / day.
Topic 9. Design of a combined solar system and individual boilers for a house heating system.
Topic 10. Design of tower-type solar power plant construction, site selection, consideration of solar tracking systems for heliostats.
Topic 11. Production and design of a parabolic-cylindrical solar thermal power station.
Topic 12. Design of wind energy plants.
Topic 13. Design of heat pump devices.
Topic 14. Design and installation of biogas devices.
Topic 15. Development and design of small and micro hydroelectric power plants.

Instructions and recommendations for practical training

1. Analysis of parameters, characteristics and energy indicators of energy devices based on Alternative and renewable energy sources and other data.
2. Study and analysis of issues of power supply of unmarked consumers.
3. Constructions of photovoltaic batteries and requirements for them.
4. Requirements for electrical safety of photovoltaic stations and procedures for their use.
5. Requirements for components of photovoltaic stations and procedures for their use.
6. Charge-discharge controllers and inventories in photovoltaic systems and calculations for their design.
7. Inspection and maintenance of devices of decentralized power supply systems.
8. Calculations for the design of hot water supply of 400-600 l / day for hot water supply of facilities.
9. Design calculations for the use of combined solar systems and individual gas boilers for heating systems.
10. Design calculations for the construction of tower-type solar thermal power plants.
11. Modeling the design processes of a parabolic trough solar thermal power plant.
12. Design procedures for wind energy installations and stations.
13. Design methods for heat pump installations.
14. Design and installation of biogas installations.
15. Design processes for small and micro hydroelectric power plants.
16. Study of the methodology for determining geothermal resources
17. Study of the design of a geothermal system providing heat
18. Calculation of two-circuit geothermal power plants
19. Calculation of one-circuit geothermal power plants
20. Calculation of the FIC of a hydrogen-oxygen fuel cell
21. Study of the electrophysical properties of a solar cell battery
22. Calculation of solar power plants with a flat parabolic concentrator

References:

1. Twidell J.W., Wier A.D. Renewable Energy Resources. London, 2015.
2. Gemma Herranz, Gloria P. Rodriguez. Uses of Concentrated Solar Energy in Materials Science.-Spain; INTECH, 2010. ISBN 978-953-307-052-0

3. S.A. Nikonov, A.A Goryayev, S.V Petukhov, N.B. Balanseva, SV Butakuv. Non-traditional energy sources and agropromishlennom complex. Metodicheskiye ukazaniya dlya provedenya prakticheskikh zanyatiy. Novosibrsk-2018.
4. Ellabban Omar, Abu-Rub Haitham, Blaabjerg Frede. Renewable energy resources; Current status, future prospects and their enabling technology. Renewable and Sustainable Energy Reviews, 2014.
5. Majidov I. Non-traditional and renewable energy sources-T.. Vopris publishing house-2014.
6. Kichev Sh.I., Mukhammadiyev M.M., Avezov R.R., Potoyenko K.D. Non-traditional and renewable energy sources. Textbook. T.. Science and Technology Publishing House-2010.
7. Mukhammadiyev M.M., Tashmatov Kh.K. Energy harvesting devices. Textbook.-T.. New edition-2010.
8. Bakhadirkhanov M.K., Kobilin G.O., Tachilin S.A., Physics and technology of solar elements. Ch.1.2.-T.. TGTU-2007.

1.2. Diploma and Diploma supplement

Upon completion of the curriculum and educational programs, according to the results of the state certification, graduates are awarded the academic degree "bachelor" in the field of training or the academic degree "master" in a specific specialty of the training area. A state diploma is issued (According to the Orders of the Minister of Higher and Secondary Special Education of the Republic of Uzbekistan "On approval of the regulations on the final state certification of graduates of higher educational institutions in the Republic of Uzbekistan," No. 1963 dated 05.06.2009, and "On the approval of the Regulations on Higher Education," No. 1222 of 22.02.2003).

To ensure transparency, the diploma is issued with an appendix specifying the educational program's objectives and training results.

Sample Diplomas and supplements to the diploma are attached (***Appendix Sample diploma and Supplement***). The diploma Supplement summarizes the student's academic achievements. The diploma and the diploma supplement are issued following the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan "On approval of state samples of diplomas of higher education of bachelors and masters" (Resolution of the Cabinet of Ministers of the Republic of Uzbekistan, dated 07/19/2019 No. 607).

4.3. Relevant rules

Persons admitted to study by the order of the rector of the university are students of JizPI.

JizPI claims have the following rights:

- acquiring knowledge at the current level of science, technology and culture development;
- participating in all kinds of educational activities at the university;
- discussing and participating in important issues related to university and faculty activities, including influence through public organizations and management bodies of higher educational institutions;

- free use of the library, computers, educational laboratories, information funds, educational, scientific health and other network services of the university;
- raising the issue of replacing teachers who are unable to ensure the quality of training sessions;
- participating in Olympiads, contests, international contests and various examinations;
- participating in all types of scientific-research works - grants, international grants, scientific seminars, symposia;
- recommending one's work to a publisher, including university publications;
- mastering academic subjects in the field of specialization chosen by him and all other subjects taught at the university on the basis of a contract;
- working outside the university and outside of the university with an employment contract in their spare time,
- complaining according to the orders and instructions of the university management in accordance with the procedure established by the legislation of the Republic of Uzbekistan;
- receiving training in a military specialty in accordance with the procedure established by the legislation of the Republic of Uzbekistan.

On the basis of state grants, students who have mastered the subjects studied in the full-time department are provided with a scholarship in the order and size determined by the government of the Republic of Uzbekistan. Students are eligible for prestigious scholarships based on certain rules. A stipend can be assigned to students who are admitted to study under a payment contract of legal entities or individuals and are achieving mastery. According to the medical report, the student may be granted an academic leave in accordance with the applicable laws.

Full-time students, in accordance with the Law of the Republic of Uzbekistan, are given the opportunity to postpone the term of military service until the end of their studies at the university. Students who need a place to stay will be given a place in the university dormitory. The amount of payment for living in a dormitory, utility, and household services for students is set at an amount not exceeding 20% of the amount of the scholarship.

Obligations of students are as follows:

- Participation in compulsory audience training of all kinds, in-depth acquisition of theoretical knowledge, practical skills and modern methods of scientific research in the chosen specialty, social and humanitarian sciences;
- completing all types of tasks provided for in a specific curriculum and rating control schedule on time;
- striving to constantly improve general and national culture, acquire economic, legal and ecological knowledge, spiritual and moral, aesthetic and physical perfection;
- active participation in public holidays, public events, contests, etc.;

- provision of university equipment, literature, educational tools and other property;
- compliance with technical safety rules, internal order and cleanliness procedures in the university area and in the dormitory;
- if a student is expelled from the ranks of university students, he can be reinstated for 5 years based on a tuition payment agreement.

Students have the right to transfer to other higher education institutions (recovery). Students of unaccredited (unauthorized) higher education institutions are not allowed to transfer (re-instate) to other universities and institutes. The procedure and conditions for reinstatement and transfer of students to study are given according to the rules approved by the Cabinet of Ministers of the Republic of Uzbekistan. Students are obliged to comply with the Charter of the university, as well as the rules of the internal procedure. It is forbidden to involve students in work unrelated to the educational process at the expense of study time, except in cases that are in accordance with the Decision of the Government of the Republic of Uzbekistan. Disciplinary punishment shall be applied within a period of not more than one month from the date of discovery of his act and within six months from the date of the offense. This does not take into account the fact that the student is sick or on vacation. Dismissal of students from the ranks of university students is not carried out during the period of their illness, vacation, academic leave, or during pregnancy and maternity leave.

The following incentive measures are established for students studying at the university who have achieved good mastery, active participation in research and team activities:

- announcement of thanks;
- awarding with a certificate of honor and an expensive gift;
- inclusion in the honor board;
- awarding, etc.;
- establishing a prestigious university-wide scholarship;
- Submission to the scholarship of the President of the Republic of Uzbekistan.

The links to the English webpages of the programmes.

https://jizpi.uz/en/yonalish/2/
https://jizpi.uz/en/yonalish/3/
https://jizpi.uz/en/yonalish/4/
https://jizpi.uz/en/yonalish/5/

5. QUALITY MANAGEMENT: QUALITY ASSESSMENT AND DEVELOPMENT

5.1. Quality assurance and further development

The strategy for establishing and developing a comprehensive system of personnel training in the Republic is aimed at meeting the demand of society and the state for qualified, competitive specialists. This strategy is based on a systematic approach.

In forming and implementing a system for monitoring and managing the quality of education, it is necessary to improve the quality of continuous education within the framework of state educational standards that define the requirements for the development and growth of the individual.

The increase in global interaction and the growing trend of Uzbekistan's integration into the international educational sphere require improvements in approaches to ensuring the quality of education in higher education institutions. One way to address this issue is to further develop the system of quality assurance at the Institute by applying European standard criteria.

The quality assurance system at the Institute is one of its top priorities, aimed at guaranteeing students' access to high-level knowledge and increasing their competitiveness in the labor market. At the same time, the action plan includes monitoring the quality of education and students' knowledge, effective management of the Institute, ensuring academic mobility, launching new modern educational programs for training specialists for the labor market, and more. This system, developed at the Institute, has served as the basis for assessing the quality of education at both national and international levels.

The main goal of the Institute is to train highly qualified specialists with strong fundamental and practical preparation, enabling them to be competitive in the labor market.

Several factors influence the quality of education at the Institute, including:

- the improvement of students' knowledge;
- the quality of student assessment;
- the level of remuneration of faculty members and their academic potential;
- the support and nurturing of talented youth;
- challenges in solving issues related to the organization of internships;
- involvement of leading industry experts in the educational process;
- the level of material and technical support of the educational process;
- stable financing of the Institute's educational programs.

The quality assurance system of **education includes**:

- developing a strategic plan under competitive conditions in the education market;
- assessing the effectiveness of educational programs from the perspective of employers and other stakeholders to ensure compliance with market demands;
- a self-assessment-based system of quality control;
- focusing on students' level of preparation in line with the maximum requirements of state educational standards.

Overall, the current state of quality assurance in education is characterized by efforts to implement a new management system based on motivational principles that activate both faculty and students. The modern quality assurance system introduces a paradigm shift from quality control to self-assessment of quality by stakeholders.

Under current conditions, the entire educational process at the Institute is directed toward developing a model of professional training and an appropriate management system for higher education institutions, as well as creating a self-developing pedagogical environment as an innovative criterion.

The internal goals of Jizzakh Polytechnic Institute (JizPI) in ensuring the quality of education are as follows:

- helping graduates achieve a high level of quality;
- creating a supportive learning environment;
- reducing the rate of "academic failure" among time-constrained students;
- optimizing and transforming the management system of JizPI;
- opening new fields of bachelor's and master's programs;
- developing JizPI infrastructure and ensuring favorable learning conditions;
- using new information technologies in education;
- improving the professional competence of JizPI faculty members;
- strengthening the economic situation of JizPI;
- digitalizing the educational process;
- achieving high levels of social activity and labor productivity in production;
- optimizing the educational process to minimize resource use without compromising education quality.

The **external goals** of ensuring the quality of education are:

- becoming a certified JizPI with a robust quality assurance system, thereby expanding and developing new markets for student recruitment and graduate employment;

- enhancing the reputation of JizPI;
- focusing on meeting the requirements of clients, staff, and employers.

To achieve these goals, the following **tasks** have been addressed:

- a mechanism for continuously improving the quality of educational services provided by JizPI has been created;
- JizPI has further developed its quality assurance system to continuously improve work performance;
- the level of interest of all employees in improving their results has increased;
- compliance with the requirements of the Concept for the Development of Higher Education in the Republic of Uzbekistan until 2030 has been ensured;
- JizPI has created conditions for the successful completion of international accreditation procedures for its educational programs.

The **main conditions** for ensuring the quality of the educational process are:

- the objectives and content of education;
- the professional skills of teachers and the organization of their activities;
- the state of the material, technical, and scientific-information base of the educational process.

Students' intellectual potential includes:

- Theoretical knowledge – deep understanding of fundamental and specialized disciplines.
- Analytical and logical thinking – skills in analyzing problems, drawing scientifically based conclusions, and making decisions.
- Creative approach – finding new solutions to technical problems and promoting innovative ideas.
- Practical skills – applying theoretical knowledge in practice, understanding and managing technological processes.
- ICT competence – ability to work with modern software tools and digital technologies.
- Independent learning and self-development – mastering new knowledge independently and continuously improving qualifications.
- Communication skills – clearly expressing scientific and technical ideas, teamwork, and problem-solving in collaboration.

The active involvement of society in the development of technical education requires graduates of technical higher education institutions to occupy a special place in the labor market as stakeholders. Therefore, graduates of

technical higher education institutions also belong to the key actors of the education market. The necessity of working with stakeholders is determined by the importance of their opinion about the Institute, as they shape public opinion and, consequently, influence the Institute's market image.

The intellectual potential of faculty members consists of their scientific knowledge, creative thinking, pedagogical skills, and achievements in research activities. Intellectual potential is manifested not only in personal knowledge and skills but also in the ability to establish scientific schools, foster independent thinking in students, promote innovative ideas, and implement them in practice. Its significance lies in improving the quality of education, engaging students in scientific and creative activities, contributing to the economy through innovative ideas, and enhancing the Institute's academic reputation and ranking.

JizPI has developed two mechanisms for quality assurance based on Uzbekistan's new quality standards: monitoring the implementation of the strategy and self-assessment of educational programs. The Institute plans to further improve these mechanisms. They include:

- providing state educational standards, qualification requirements of fields of study (specialties), curricula, and syllabi;
- developing working curricula and syllabi based on approved educational programs;
- ensuring adequate provision of textbooks in all educational fields and specialties in the languages of instruction;
- supplying textbooks and creating a new generation of educational literature;
- ensuring laboratory work for each subject according to curricula, providing appropriate equipment and reagents, and having methodological guidelines;
- providing the necessary equipment, tools, inventory, machinery, raw materials, and more.

Regardless of their level of study, students are considered both the object and subject of the educational process. At JizPI, the principle of "student as a client" is applied.

5.2. Tools, methods, and data

JizPI students participate in quality assurance by providing regular feedback on important institutional issues and specific educational programs, as well as by being represented in councils and other advisory bodies responsible for planning, developing, approving, and monitoring academic programs.

They are also members of the Uzbekistan Youth Union.

The tasks of involving students in the quality assurance process are as follows:

- conducting surveys to organize and monitor the quality of education;
- comprehensively assessing students' needs as consumers of educational services using various research methods;
- involving students in solving organizational issues of the learning process;
- collecting students' opinions on improving educational resources and material-technical facilities;
- considering students' educational, scientific, social, and professional interests;
- ensuring students' participation in discussions of documents regulating their rights, duties, and interests;
- introducing students to normative-legal documents in the field of education;
- informing students about policies in the field of education quality;
- engaging students in the evaluation of teaching quality;
- including student representatives in educational projects.

JizPI conducts annual surveys among students, which allow them to express their opinions about the quality of teaching. In addition, the Institute takes students' opinions into account to improve the effectiveness of personnel policy. Colleagues also evaluate teachers' activities.

Students' and graduates' feedback is collected regularly (1–2 times per semester) in the form of surveys to study satisfaction with the quality of education. Surveys among students and teachers are conducted by the Institute's educational-methodical department, the Department of Education Quality Control, and faculty deans. The Department of Education Quality Control verifies and summarizes the results. Based on these results, measures are taken to improve the educational process.

JizPI also carries out various activities annually to gather feedback from employers. This includes conducting surveys, discussing programs, collecting opinions from professional community representatives participating in the work of employers and State Attestation Commissions (SAC), and receiving feedback from enterprises, organizations, and institutions. Collaboration with employers plays an important role in assessing and improving the quality of education and monitoring the professional growth of graduates.

The results of monitoring are used to assess the quality of education, identify shortcomings, eliminate them as quickly as possible, and develop preventive and corrective measures. These data serve as an important source for developing and implementing programs to improve educational management processes.

It should be noted that cooperation with employers is especially important for the Institute, particularly in analyzing and evaluating new educational programs, discussing expected learning outcomes, and involving employers in planning necessary professional competencies for graduates.

In addition, JizPI regularly conducts surveys among students of all courses to determine the level of satisfaction of stakeholders with the quality of education. These surveys cover the following aspects:

- the structure and content of academic programs;
- teaching methodology and quality of educational resources;
- effectiveness of the educational process and teachers' performance;
- student–teacher relationships;
- cultural and living conditions;
- volume and relevance of information provided during the educational process.

Surveys also assess students' satisfaction with IT departments, administrative and management staff, and the condition of the Institute's classroom facilities.

The Institute monitors the quality of students' knowledge, which is analyzed and discussed at scientific councils and academic-methodical councils of faculties. When evaluating the quality of academic programs, the consistency between actual and expected learning outcomes in students' and graduates' performance is taken into account.

The academic community of the Institute understands its mission as commitment to the principles of academic integrity, trust, respect, fairness, and responsibility:

- the academic community adheres to the principle of intellectual honesty in learning, teaching, research, and non-scientific studies;
- the academic community strives to maintain an atmosphere of trust, without which free exchange of ideas, creativity, and personal development are impossible;
- relations among all members of the academic community, regardless of their status, are based on mutual respect, as well as respect for education, research, creative activity, and their results;
- relations among members of the academic community are based on the principle of fairness;
- all members of the academic community share responsibility for preserving a culture of academic integrity.

The main principles of students' academic integrity in the educational process include:

- honesty – completing academic tasks fairly and responsibly;

- respect for the rights of authors and their legal successors, as well as other intellectual property rights;
- proper citation of others' speech and ideas, recognizing and protecting authorship of works;
- openness, mutual trust, and free exchange of academic and scientific ideas among students, teachers, and staff;
- respect for students' rights and freedoms;
- students' right to freely express their thoughts and ideas;
- the duty of faculty and staff to observe the rules of academic integrity and equal accountability for violating them.

An essential component of the learning process is students' success, which can be achieved through cooperation with peers. By working together to overcome learning difficulties, studying common concepts and problems, and considering each other's ideas and actions, student groups can improve and accelerate the learning process. The Institute supports such initiatives among students.

Quality assurance in education is a system for collecting, processing, storing, and disseminating information about the processes, quality, and effectiveness of pedagogical and educational activities of all participants in the learning process. It is related to all management functions, aimed at ensuring information management, providing efficiency, and enabling assessment of the state of controlled objects at the required (control) time.

The purpose of quality assurance in education is to study the compliance of students' knowledge with state educational standards and qualification requirements, analyze and control the quality of personnel training, identify factors negatively affecting education quality, and take measures to eliminate and prevent them.

The tasks of quality assurance in education include:

- analyzing the provision and consistency of study fields and specialties with state educational standards (SES), qualification requirements, curricula, syllabi, working curricula, and course syllabi;
- studying the quality of the learning process and its provision with textbooks and teaching-methodical materials;
- participating in student assessment processes;
- ensuring the objectivity and transparency of student assessment procedures and results;
- optimizing class schedules formed by faculty deans;
- analyzing lessons for each subject and reporting to the Institute rector;
- monitoring teachers' attitudes toward classes;

- preparing analytical reports based on assessment results and presenting them at Institute Council and rector meetings;
- studying final state attestation commission documents to evaluate graduates' knowledge level;
- monitoring vocational and educational training quality based on organizational-legal and methodical guidelines;
- monitoring quality indicators, submitting proposals to the rector on identified problems and shortcomings;
- analyzing the effectiveness of modern teaching methods used by faculty;
- analyzing the state of the material-technical base, making proposals for its development and improvement;
- organizing and monitoring qualification and industrial internships for students considering their study fields and specialties;
- conducting social surveys among students, parents, teachers, and staff to improve the educational environment, training quality, and education system;
- analyzing graduates' admission to the next stage of education or employment.

The quality assurance system at the Institute is based on the principles of independence, transparency, fairness, and periodicity, covering all stages of the educational process. This system evaluates students' knowledge compliance with state standards and qualification requirements, analyzes the effectiveness of the learning process, and identifies and eliminates factors that negatively affect quality. Its main tasks include monitoring curricula and syllabi consistency, analyzing the educational process, evaluating teachers' performance, developing the material-technical base, studying the social environment, and ensuring graduates' competitiveness in the labor market.

In general, the quality assurance system at the Institute is an important factor in improving the personnel training process, increasing the effectiveness of the educational process, and ensuring high-quality education that meets the needs and requirements of stakeholders.

Table 5.1 Information on the employment of graduates of the master's degree of JizPI

Years	Code	Degree programme	Total number of graduates:	Number of employed	Percent	Number of unemployed	Percent
2021	70710410	Energy saving and energy audit	9	8	89 %	1	11 %
2022	70710410	Energy saving and energy audit	23	21	91 %	2	9 %
2023	70710410	Energy saving and energy audit	11	10	91 %	1	9 %
2024	70710410	Energy saving and energy audit	3	3	100 %	0	0 %
2025	70710410	Energy saving and energy audit	2	2	100 %	0	0 %
		Total:	**48**	**44**	**92 %**	**4**	**8 %**

External evaluation.

In recent years, Jizzakh Polytechnic Institute (JizPI) has been assessed at the international level by several global ranking agencies. In particular, the university participates in the following international rankings: **THE World University Rankings** and **THE Impact Rankings** by *Times Higher Education*, **QS World University Rankings: Asia**, **QS Sustainability Rankings**, and **UI GreenMetric**. Below are the latest results from these rankings:

- According to the **Times Higher Education (THE) World University Rankings 2024**, JizPI, along with 48 other higher education institutions in Uzbekistan, was awarded the **"Reporter"** status.
- In the **Young University Rankings 2024** by THE, JizPI also received **"Reporter"** status and was included among the world's top young universities.
- Based on the **QS Asia University Rankings 2024**, JizPI ranked in the **751–800** range among Asian universities and **45th** among universities in Central Asia.
- In the **QS Asia University Rankings 2025**, the university was placed in the **851–900** range in Asia and **61st** in Central Asia.
- In the **THE Impact Rankings 2023**, JizPI was ranked in the **1001+** band, and in the **2024 edition**, it was ranked in the **1501+** band.
- According to the **UI GreenMetric World University Rankings 2022**, Jizzakh Polytechnic Institute ranked **1st among higher education institutions in Uzbekistan** and **327th globally**.
- In the **UI GreenMetric Overall Rankings 2023**, JizPI maintained its **1st place in Uzbekistan** and improved to **266th place globally**.

- In the **UI GreenMetric Overall Rankings 2024**, the institute was ranked **4th among higher education institutions in Uzbekistan** and **370th globally**.

Internal evaluation.

At the end of each academic year, the Council reviews the report on the activities of JizPI. It is formed on the basis of the annual reports of all structural divisions, faculties, centers, departments, and others. In accordance with work plans, reports of vice-rectors, deans, and heads of departments are regularly heard, and the efficiency of the departments' activities is reviewed and analyzed by the JizPI Council and faculty councils in relation to certain directions of the JizPI strategy.

In discussing all issues, management matters are, of course, considered in connection with the unity of processes.

The tasks of the internal audit of state educational standards are as follows:

- To assess the compliance of the entire national program, its processes and sections, with the current state educational standard, the mission, policy, and requirements of JizPI.
- To verify the effectiveness of corrective actions aimed at eliminating shortcomings identified in previous internal audit results.

The main criterion of internal audit is the compliance of a department's activities with the current state of the faculties and divisions being audited in relation to the processes reflected in the relevant documents.

Conducting various surveys is considered an effective tool for assessing the activities of JizPI and its subdivisions, as well as the satisfaction level of professors, staff, and students with the management system. At JizPI, based on the recommendation of the Questionnaire Council, survey forms are conducted at the end of each quarter after the completion of final exams. Thus, they are organized twice in one academic year. The survey process is carried out through the https://docs.google.com/forms platform. On this platform, senior specialists of the Education Quality Control Department compile information about professors and teachers separately by course, field of study, master's specialization, and language, and conduct it in the form of questionnaires.

When students access the platform, only information about the professors and teachers who taught them is visible. Students can log into the Google Forms platform via their email addresses and participate in the survey anytime and anywhere using a computer, tablet, or personal mobile device. This approach not only reduces various bureaucratic barriers, but also creates favorable conditions for students to express their opinions freely, independently, and anonymously. As a result, the reliability and credibility of the collected data increase, allowing for well-founded conclusions in the evaluation of education quality.

On the Google Forms platform, survey questions appear in the following format:

2. The professor/teacher's speech culture and ethics of conduct during communication with students in the course of the lesson

	Friendly and fluent ...	During communication ...	In the communication process ...	Teacher's speech ...
A. Parsokhonov	○	○	○	○
A. Saodullayev	○	○	○	○
B. Xoldorov	○	○	○	○
G. Kushakov	○	○	○	○
U. Khudoyberdiyev	○	○	○	○
X. Majidov	○	○	○	○

9. Does the professor/teacher's level of knowledge meet the requirements of the student?

	Excellent	Average	Satisfactory	Very low level of knowledge ...
F. Nazarov	○	○	○	○
A. Parsokhonov	○	○	○	○
G. Kushakov	○	○	○	○
A. Akhmedov	○	○	○	○

JizPI has developed a procedure for documenting the types of surveys conducted.

The objectives of the questionnaires are as follows:

- To reveal the specific features of students' subjective assessment of the given parameters of teachers' professional skills;
- To evaluate the professor/teacher's speech culture and ethical conduct during communication with students in the course of lessons;
- To assess the novelty, accuracy, logical structure, and consistency of the information provided by the professor/teacher during classes;
- To determine the demand of students and employers for educational services;
- To monitor the quality of the educational process;
- To assess the level of information and communication technologies, knowledge of foreign languages, and the use of interactive methods;

- To obtain feedback aimed at properly directing the efforts of professors/teachers and staff, clarifying the requirements for their activities, and encouraging improvements in their work;
- To evaluate whether the professor/teacher's level of knowledge meets the required standards;
- To improve the qualifications of professors/teachers and staff (formation of personnel reserves, forecasting career advancement, identifying the need and direction for professional development);
- To determine whether lectures, practical, seminar (laboratory) classes are organized appropriately and whether students' interests are taken into account;
- To identify the level of satisfaction with the quality of education, educational services, working conditions, and material-technical facilities;
- To assess the alignment between JizPI's goals and the personal goals of employees.

For example, the results of the "Improving the Quality of Education at JizPI" survey allow the assessment of satisfaction with certain aspects of JizPI's activities.

In the 2023–2024 academic year, 571 students of the faculty participated in a social survey conducted by the JizPI Department for Education Quality Control. The survey covered issues such as the educational process at JizPI, the qualifications of professors/teachers, the transparency of grades assigned by professors/teachers, cooperation with employer organizations, and others. Students' opinions were studied on the following issues:

- Were you satisfied with the lessons given by the professor/teacher?
- Does the professor/teacher who conducted the class have good knowledge of their subject?
- Did the professor/teacher provide new information related to the topic during the class?
- Does the professor/teacher evaluate students transparently and impartially in their subject (ON and JN grades)?
- Did the professor/teacher manage to engage your interest in their subject during the lesson?
- Would you like this professor/teacher to continue teaching this subject?
- During the teaching process, does the subject teacher expect material benefits in any form?
- Do heads of departments attend classes to monitor and analyze the lessons?

№	Teacher's Full Name	Subject and Type of Class	1 question	2 question	3 question	4 question	5 question	6 question	7 question	8 question
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

- *Note: If your answer is "Yes", put 1; if "No", put 0..*

- "In your opinion, if there are cases of corruption in the institute, what measures should be taken to prevent such situations?

  _____

- What do you think should be done to improve the quality of education at the institute?

  _____

In the 2024–2025 academic year, 590 students of the faculty participated in a Social Survey conducted by the JizPI Department for Education Quality Control. The survey included the following questions with multiple-choice answers to study students' opinions:

- What is your opinion of the overall quality of education at the institute?
- The professor/teacher's speech culture and ethical conduct during communication with students in the course of lessons. (List of teachers)
- The novelty, accuracy, logical structure, and consistency of the information provided by the professor/teacher during the class.
- The level of use of foreign-language learning materials by the professor/teacher.
- The level of use of information and communication technologies (ICT) and interactive methods by the professor/teacher.
- The relevance and quality (novelty and convenience) of the literature used by the professor/teacher in their subject area.
- Are lectures, practical classes, seminars (laboratory classes) organized appropriately for you, and are students' interests taken into account?

- How do you evaluate the level of integration of theory and practice in the lessons?
- Does the professor/teacher's level of knowledge meet the required standards?
- (List of teachers)
- How do you assess the relevance of the curriculum in your specialty to modern requirements?
- When assessing students' knowledge, do professors/teachers treat your group differently based on financial circumstances or act unfairly toward you?
- Do professors/teachers commit acts of dishonesty or bribery in the process of evaluating students' knowledge?
- Do these professors/teachers carry out their work according to the "Master–Apprentice" tradition? (List of teachers)
- Are the opportunities to use library and electronic resources sufficient?
- How do you assess the technical equipment level of classrooms and laboratories at the institute?
- Are the opportunities for using information technologies at the institute sufficient for you?
- In your opinion, what are the strengths of your university?
- What do you think should be done to improve the quality of education at the institute?

The results of these surveys are thoroughly analyzed, and specific strategies are developed to improve the quality of education. Every opinion and suggestion is considered important for enhancing the quality of education at the institute.

Survey analyses show that, within the "Improving the Quality of Education at JizPI" program, 4,000 students participated, and 3,724 respondents (93.1%) expressed complete satisfaction with the educational program. Similarly, under the following year's "Improving the Quality of Education at JizPI" program, out of 5,800 respondents, 5,535 (95.44%) reported satisfaction with the quality of educational services.

In accordance with the decision on improving the evaluation system of higher education administrators and professors/teachers based on the principles of TQM (Total Quality Management), a performance measurement system (KPI) with a maximum of 110 points has been established at the institute to evaluate professors/teachers.

At JizPI, the activities of professors/teachers who received negative feedback in the surveys are monitored by a working group approved by the Institute Council. If the complaints written in the questionnaire are proven true, the professor, teacher, or scientific advisor is given a strict warning or, depending on the

violation of the law (if such a case is repeated), disciplinary measures are applied. If the same violation occurs a third time, the Institute Council is requested to deem the individual unfit for the teaching profession.

Tables 5.2.

In the 2023–2024 academic year, based on the results of the student survey on the quality of teaching by professors and teachers of the Faculty of Energy Engineering, some students' opinions about the professors/teachers were collected

Reference

№	Full Name.	Department	Negative Feedback
1	A. Burliyev	*Computer and Software Engineering*	1 The professor/teacher does not evaluate students fairly and transparently in their subject. 2 The professor/teacher does not provide new information related to the topic during the class. 3 During the learning process, the teacher expects material benefits in various forms.
2	Mamarizayeva	Uzbek and Foreign Languages	1 I am dissatisfied with the professor/teacher's lessons. 2 The professor/teacher does not have good knowledge of their subject. 2 The professor/teacher does not evaluate students fairly and transparently in their subject. 4 The professor/teacher cannot engage students' interest in their subject during the class.
3	S. Norqulov	Physics	1 I am dissatisfied with the professor/teacher's lessons. 2 The professor/teacher does not have good knowledge of their subject. 3 The professor/teacher does not evaluate students fairly and transparently in their subject. 4 The professor/teacher cannot engage students' interest in their subject during the class. 5 During the learning process, the teacher expects material benefits in various forms.
4.	G.Mamatqulova		1 I am dissatisfied with the professor/teacher's lessons. 2 The professor/teacher does not have good

			knowledge of their subject. 3 The professor/teacher does not evaluate students fairly and transparently in their subject. 4 The professor/teacher cannot engage students' interest in their subject during the class..
5	N. Aripov	Engineering Communications	1 I am dissatisfied with the professor/teacher's lessons. 2 The professor/teacher does not have good knowledge of their subject. 3 The professor/teacher does not evaluate students fairly and transparently in their subject. 4 The professor/teacher cannot engage students' interest in their subject during the class. 5 During the learning process, the teacher expects material benefits in various forms.
6	Sh.Parmonov	Energy and Electrical Technology	1 I am dissatisfied with the professor/teacher's lessons. 2 The professor/teacher does not have good knowledge of their subject. 3 The professor/teacher cannot engage students' interest in their subject during the class
7	U. Mirzayev	Energy and Electrical Technology	1 The professor/teacher does not have good knowledge of their subject. 2 The professor/teacher does not provide new information related to the topic during the class. 3 The professor/teacher cannot engage students' interest in their subject during the class.
8	A.Mamasoliyev		1 I am dissatisfied with the professor/teacher's lessons. 2 The professor/teacher does not have good knowledge of their subject. 3 The professor/teacher does not evaluate students fairly and transparently in their subject. 4 The professor/teacher cannot engage students' interest in their subject during the class..

Regarding some students' opinions about professors/teachers based on the survey results on the quality of teaching by the Faculty of Energy Engineering professors/teachers during the 2024–2025 academic year Reference

№	Full Name.	Department	Negative Feedback
1	U.Khudoyberdiyev	Energy and Electrical Technology	1 The teacher's speech culture does not meet the required standards. 2 Uses loud and dialectal words during communication. 3 Cannot pronounce scientific terms correctly during communication. 4 Does not follow the "Master–Apprentice" tradition.
2	M.Khasanov	Energy and Electrical Technology	1 Uses loud and dialectal words during communication. 2 Not active in the "Master–Apprentice" tradition.
3.	F.Nazarov	Energy and Electrical Technology	1 The teacher's speech culture does not meet the required standards. 2 Does not follow the "Master–Apprentice" tradition.
4.	A.Parsokhonov	Energy and Electrical Technology	1 Very low level of knowledge. 2 Does not follow the "Master–Apprentice" tradition.
5.	I.Saitmuratov	Energy and Electrical Technology	1 Uses loud and dialectal words during communication. 2 Does not follow the "Master–Apprentice" tradition
6.	A.Saodullayev	Energy and Electrical Technology	1 Uses loud and dialectal words during communication. 2 Does not follow the "Master–Apprentice" tradition.

5.3. Student Participation in University Councils

In order to create favorable conditions for the education and upbringing of young people in the institution, to protect their rights and interests, and to support the upbringing of a well-rounded generation, JizPI students are appointed as members of the JizPI Institute Council and the Public Council. Among these students are leaders of the Youth Union, winners of the State Award named after Zulfiya, holders of state scholarships, winners of national academic olympiads, well-known public figures, and other talented students.

The main function of the Institute Council is to serve as the highest collegial governing body of the institute. It is responsible for overseeing the institute's overall academic, administrative, and financial activities. The Institute Council usually makes key decisions on strategic development, research, budget and finance, compliance with regulatory documents, and internal governance. The Council ensures that the institute's practices align with its strategic goals and comply with national educational regulations. It generally consists of university administrators, faculty representatives, and sometimes external stakeholders. Student members of the Institute Council act on behalf of other students and represent the general perspective of the student body.

At the Institute Council, issues related to youth concerns, the quality of education, mastery of subjects, student attendance, the level of use of textbooks and the library, and addressing and resolving student appeals are considered. In addition, systematic activities within the Master–Apprentice framework, identifying talented youth, implementing measures aimed at fully supporting and encouraging them, and organizing clubs that serve to develop intellectual and creative abilities are considered advisable.

As members of the Council, students are entitled to the following powers:

- To propose issues for inclusion in the Council's agenda;
- To express opinions and make suggestions on issues discussed at Council meetings;
- To elect and be elected to commissions, working groups, and other bodies established by the Council;
- To express opinions and make suggestions regarding decisions adopted by the Council;
- To propose elections to and removal from the Council;
- To propose to the Chairperson of the Council to convene an extraordinary meeting.

The number of students who are members of the Institute Council and the Public Council

	University Council
2022-2023 years	1
2023-2024 years	1
2024-2025 years	1
2025-2026 years	1

6. CONCLUSION

Today, as in all areas, fundamental reforms are being carried out in the higher education system in Uzbekistan. The financial and academic independence of higher education institutions is being ensured. Improving the quality of education in bachelor's and master's degree programs, training qualified specialists for the economy is becoming a priority. The scientific, educational, and international activities of the educational programs that prepare personnel for the energy sector, the analysis of whose activities was presented above, over the past five years and today have been analyzed.

During the preparation of the documents necessary for this accreditation and the coverage of the activities, the following priority areas were identified to increase the efficiency and effectiveness of the activities of educational programs:

- in the direction of improving the educational process: enriching the quality of education in terms of form and content based on the introduction of modern and advanced pedagogical technologies into the educational process;
- in the direction of developing international cooperation: effective and fruitful cooperation with international partners in educational and scientific activities, implementing scientific projects and ensuring publication activity; increasing the share of international students;
- in the direction of the development of the material and technical base: to attract local and international partners for the purpose of developing the material and technical base of educational areas, to look for opportunities to use samples of techniques and technologies used in production in educational processes;
- in the direction of increasing the efficiency of scientific activity: increasing the publication activity of professors and teachers in internationally indexed bases, increasing the share of scientific projects and business contracts, etc.

Table 5.3 Organisational chart of JizPI