

**Profile of the educational programme «Automated Electrotechnical Complexes of Oil and Gas Industry» in specialty
141 Electrical Energetics, Electrical Engineering and Electromechanics**

1 – General information	
Full name of higher educational institution	O.M. Beketov National University of Urban Economy in Kharkiv
Higher education degree and the title of qualification in the original language	Bachelor in Electrical Engineering, Electrical Engineering and Electromechanics.
Official title of the educational programme	Automated Electrotechnical Complexes of Oil and Gas Industry
Type of diploma and the scope of the educational programme	Bachelor's degree, single, 240 ECTS credits, study period 3 years 10 months.
Accreditation certificate	Ministry of Education and Science of Ukraine Certificate of accreditation UD 21008298 The certificate is valid until July 1, 2028.
Cycle/level	The first (bachelor's) level NRC of Ukraine - level 6 FQ-EHEA - the first cycle EQF-LLL - level 6
Admission requirements	Complete general secondary education.
Language (s) of teaching	Ukrainian, English.
Duration of the educational programme	10 years.
Internet address of permanent placement of the educational programme description	https://met.kname.edu.ua/index.php/uk/osvitni-prohramy-gl/bakalavrskyi-riven/opp-2021/op-avtomatyzovani-elektrotekhnichni-kompleksy-naftohazovoi-haluzi-2021
2 – Object of the educational programme	
Training of specialized specialists for the oil and gas industry, capable of solving complex narrowly focused tasks and practical problems of the electric power industry, electrical engineering and electromechanics of automated electrical complexes of the oil and gas industry	
3 – Description of the educational programme	
Subject area	Objects of study and activity: - enterprises of electric power complexes, electrotechnical and electromechanical services of organizations;

	<p>– production, transmission, distribution and transformation of electrical energy at power stations, in electrical networks and systems; electrotechnical equipment, electromechanical and switching equipment, electromechanical and electrotechnical complexes and systems.</p> <p>The purpose of the training: Training of specialists capable of solving specialized problems and practical problems of the electric power industry, electrical engineering and electromechanics, which involves the use of theories and methods of physics and engineering sciences and is characterized by complexity and uncertainty of conditions.</p> <p>Theoretical content of the subject area: basic concepts of the theory of electrical and electromagnetic circuits, modeling, optimization and analysis of the operating modes of power plants, networks and systems, electrical machines, electric drives, electrical and electromechanical systems and complexes.</p> <p>Methods, techniques and technologies: analytical methods for calculating power supply systems, electrical machines and apparatuses, control systems for electrical power and electromechanical systems, electrical loads using specialized laboratory equipment, personal computers and other equipment.</p> <p>Tools and equipment: instrumentation, electrical and electronic devices, microcontrollers, computers.</p>
Orientation of the educational programme	Educational and professional.
The key focus of the educational programme and specialization	<p>General education in the field of electrical engineering and electromechanics of automated electrical complexes of the oil and gas industry</p> <p>Key words: <i>oil and gas engineering, modular transformer substations, electrical equipment for oil and gas engineering, automation systems for the oil and gas industry, energy efficient technologies for the oil and gas complex.</i></p>
Features of the programme	Features of the educational program are the training of specialists in the electric power industry, electrical engineering and electromechanics with modern theoretical knowledge and applied skills in the field of automated electrical complexes of the oil and gas industry
4 – Graduate employability and further academic education	
Employability	<p>Professions, professional job titles (according to the current edition of the National Classifier of Ukraine: Classifier of Occupations (DK 003:2010).</p> <p>Electrical technicians (3113):</p> <ul style="list-style-type: none"> - electrical substation dispatcher; - Dispatcher of electromechanical service; - shop electrician; - electrical technician; - specialist in the operation of power plants, power plants and networks; - electromechanic; - electromechanic of group reloading machines; - electrician on the site; - electromechanic for lifting installations; - electrician of the underground section.

	Jobs in the public and private sectors in various fields of activity, in particular: production, repair, maintenance and adjustment of electrical equipment; design of electric power and power supply systems; introduction of modern energy efficient technologies; creation of computer control systems for technological processes; design and manufacture of electrical machines for automation and electromechanotronics.
Further academic education	The possibility of continuing education at the second (master's) level of higher education. Obtaining additional qualifications in the system of postgraduate education, advanced training.
5 – Instruction and assessment	
Instruction and learning	Student-centered education, problem-oriented learning, lectures, practical employment, laboratory robots, independent work, consultations, project work, preparation of qualification work. Teaching methods: problematic presentation, illustration and demonstration, private-poshukovy, pre-succession, practical.
Assessment	Types of control: current, thematic, modular, final, self-control. Forms of control: oral and written survey, including exams; test tasks, including computer testing in the Moodle system; laboratory reports; presentations; defense of term papers and projects, practice reports; Attestation: public defense of a qualifying work.
6 – Programme competences	
Integral competence	The ability to solve complex specialized tasks and practical problems in professional activities in the field of electric power, electrical engineering and electromechanics or in the learning process, which involves the application of theories and methods of electrical engineering and electromechanics and is characterized by complexity and uncertainty of conditions.
General competences (GC) defined by the standard of higher education of the specialty	GC 01. Ability for abstract thinking, analysis and synthesis. GC 02. Ability to apply knowledge in practical situations. GC 03. Ability to communicate in the state language both orally and in writing. GC 04. Ability to communicate in a foreign language. GC 05. Ability to search, process and analyze information from various sources. GC 06. Ability to identify, pose and solve problems. GC 07. Ability to work in a team. GC 08. Ability to work autonomously. GC 09. The ability to realize one's rights and obligations as a member of society, to be aware of the values of a civil (free democratic) society and the need for its sustainable development, the rule of law, human and civil rights and freedoms in Ukraine. GC 10. The ability to preserve and multiply the moral, cultural, scientific values and achievements of society based on an understanding of the history and patterns of development of the subject area, its place in the general system of knowledge about nature and society and in the development of society, technology and technology, to use various types and forms of physical activity of active rest and healthy lifestyle.
Professional competences of the specialty (PC) defined by the	PC 01. Ability to solve practical problems using computer-aided design and calculation systems (CAD). PC 02. The ability to solve practical problems using the methods of mathematics, physics and electrical engineering.

<p>standard of higher education of the specialty</p>	<p>PC 03. The ability to solve complex specialized tasks and practical problems associated with the operation of electrical systems and networks, the electrical part of stations and substations and high voltage equipment.</p> <p>PC 04. The ability to solve complex specialized tasks and practical problems related to the problems of metrology, electrical measurements, the operation of automatic control devices, relay protection and automation.</p> <p>PC 05. The ability to solve complex specialized tasks and practical problems associated with the operation of electrical machines, devices and automated electric drives.</p> <p>PC 06. The ability to solve complex specialized tasks and practical problems associated with the problems of production, transmission and distribution of electrical energy.</p> <p>PC 07. Ability to develop projects of electric power, electrotechnical and electromechanical equipment in compliance with the requirements of legislation, standards and terms of reference.</p> <p>PC 08. The ability to perform professional duties in compliance with the requirements of safety, labor protection, industrial sanitation and environmental protection.</p> <p>PC 09. Awareness of the need to improve the efficiency of electric power, electrical and electromechanical equipment.</p> <p>PC 10. Awareness of the need to constantly expand their knowledge of new technologies in the power industry, electrical engineering and electromechanics.</p> <p>PC 11. The ability to quickly take effective measures in emergency (emergency) situations in electric power and electromechanical systems.</p>
<p>7 – Programme learning outcomes</p>	
<p>Programme learning outcomes defined by the standard of higher education of the specialty</p>	<p>PLO 01. Know and understand the principles of operation of electrical systems and networks, power equipment of power stations and substations, protective grounding and lightning protection devices and use them to solve practical problems in professional activities.</p> <p>PLO 02. Know and understand the theoretical foundations of metrology and electrical measurements, the principles of operation of automatic control devices, relay protection and automation, the skills to carry out appropriate measurements and use these devices to solve professional problems.</p> <p>PLO 03. Know the principles of operation of electrical machines, devices and automated electric drives and be able to use them to solve practical problems of professional activity.</p> <p>PLO 04. Know the principles of operation of bioenergy, wind energy, hydropower and solar installations.</p> <p>PLO 05. Know the basics of the electromagnetic field theory, methods for calculating electrical circuits and be able to use them to solve practical problems in professional activities.</p> <p>PLO 06. Apply application software, microcontrollers and microprocessor technology to solve practical problems of professional activity.</p> <p>PLO 07. To carry out the analysis of processes in the electric power, electrotechnical and electromechanical equipment, the corresponding complexes and systems.</p> <p>PLO 08. Select and apply suitable methods for the analysis and synthesis of electromechanical and electrical power systems with given indicators.</p>

	<p>PLO 09. be able to assess energy efficiency and reliability of electric power, electrical and electromechanical systems.</p> <p>PLO 10. Find the necessary information in the scientific and technical literature, databases and other sources of information, evaluate its relevance and reliability.</p> <p>PLO 11. Communicate freely with professional problems in the state and foreign languages orally and in writing, discuss the results of professional activities with specialists and non-specialists, argue their position on debatable issues.</p> <p>PLO 12. Understand the basic principles and objectives of the technical and environmental safety of electrical engineering and electromechanics, take into account when making decisions.</p> <p>PLO 13. Understand the importance of traditional and renewable energy for the successful economic development of the country.</p> <p>PLO 14. Understand the principles of European democracy and respect for the rights of citizens, take them into account when making decisions.</p> <p>PLO 15. Understand and demonstrate good professional, social and emotional behavior and maintain a healthy lifestyle.</p> <p>PLO 16. Know the requirements of regulations relating to engineering, intellectual property protection, labor protection, safety and industrial sanitation, take into account when making decisions.</p> <p>PLO 17. Solve complex specialized tasks of design and maintenance of electromechanical systems, electrical equipment of power plants, substations, systems and networks.</p> <p>PLO 18. Be able to study independently, acquire new knowledge and improve skills in working with modern equipment, measuring equipment and application software.</p> <p>PLO 19. Apply suitable empirical and theoretical methods to reduce the losses of electricity during its production, transportation, distribution and use.</p> <p>PLO 20. Be able to choose effective types of electromechanical, electrical, automatic equipment of the oil and gas complex and apply the acquired knowledge and practical skills in the development, operation and maintenance of electromechanical, electrical, automatic equipment of the oil and gas complex.</p>
8 – Resource support for programme implementation	
Staffing	<p>All scientific and pedagogical workers have the qualifications of educational components, experience in practical and scientific and pedagogical activities, regularly improve their skills through participation in scientific projects, conferences, internships in institutions of Ukraine and foreign countries.</p>
Material and technical support	<p>The material and technical support of the educational program meets the requirements and provides the possibility of effective training of applicants.</p> <p>The educational process uses specialized laboratories equipped with multimedia installations, mock-ups, models, laboratory equipment for laboratory work: "Laboratory for the transportation of oil and natural gas", "Laboratory for gas and thermal systems and air conditioning", "Laboratory of natural gas", " Laboratory of automated electric drive systems and electrical apparatus" and others.</p>

Information, educational and methodological support	<p>All educational components are provided with educational and methodological materials posted in the corresponding courses on the Moodle distance learning platform https://dl.kname.edu.ua/.</p> <p>Applicants have free access to modern professional literature and periodicals; Scopus and Web of Science databases; Springer resources; Elsevier's ScienceDirect databases; on the ScienceDirect platform - up to 39 thousand e-books and a collection of 2088 electronic monographs 2019-2020. editions.</p> <p>The university has an official website http://kname.edu.ua, where important information is distributed; library http://library.kname.edu.ua/index.php/uk/; electronic repository http://eprints.kname.edu.ua; Applicants and teachers are provided with access to the World Wide Web.</p> <p>All educational and methodological materials are available to applicants in the reading rooms of the scientific library, including in the information service room, equipped with computers with Internet access and the University's local network.</p>
9 – Academic mobility	
National credit mobility	In accordance with the Regulations on academic mobility of students, graduate students, doctoral students, scientific and pedagogical and scientific workers of O.M. Beketov NUUE in Kharkiv.
International credit mobility	Opportunity to participate in international credit mobility programs within the framework of agreements on international academic mobility O.M. Beketov NUUE in Kharkiv.
Training of foreign applicants for higher education	In accordance with the Rules for admission to training O.M. Beketov NUUE in Kharkiv.