Profile of the educational programme
«Electrical Systems and Complexes of Vehicles» 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	Master in Electrical Engineering, Electrical Engineering and Electromechanics.
Official title of the educational programme	*Electrical Systems and Complexes of Vehicles*
Type of diploma and the scope of the educational programme	Master's degree, single, 90 ECTS credits, study period 1 year 4 months
Accreditation certificate	Ministry of Education and Science of Ukraine Certificate of accreditation UD No. 21002011 The certificate is valid until 07/01/2023.
Cycle/level	Second (master's) level NRK of Ukraine - level 7 FQ-EHEA - second cycle EQF-LLL - level 7
Admission requirements	Bachelor's degree, specialist general rules on entry requirements
Language (s) of teaching	Ukrainian.
Duration of the educational programme	5 years.
Internet address of permanent placement of the educational programme description	*https://met.kname.edu.ua/index.php/uk/osvitni-prohramy-gl/mahisterskyi-riven/opp-mah-2021/op-elektrychnyi-transport-2021*
2 – Object of the educational programme	
Training of highly qualified specialists for the urban economy, capable of ensuring territorial development at the national, regional and local levels, capable of solving complex tasks and problems in the operation and development of modern electrical systems and vehicle complexes, introducing and analyzing methods for monitoring technological processes of service, diagnosing and operating vehicles means of means, to apply innovative approaches in professional activities in the field of maintenance of electrical systems and complexes of vehicles.	

3 – Description of the educational programme	
Subject area	The object of activity is scientific institutions, institutions and organizations of the electric power industry, electrical engineering and electromechanics, enterprises of the electric power complex, electrical and electromechanical companies. The object of research is the processes of production, transmission, distribution and consumption of electrical energy and the processes of its transformation in electromechanical systems with increased reliability and the use of resource-saving technologies in electrical power, electrical and electromechanical systems. The objectives of the training are to train specialists capable of designing, designing, operating, maintaining a safety culture, performing installation, debugging and repair, creating new equipment and introducing the latest technologies, conducting research and teaching. The theoretical content of the subject area is fundamental knowledge of the theory of electrical engineering, modeling and optimization of electrical power, electrical and electromechanical systems and complexes, their use for innovation and research on the operating modes of power plants, networks and systems, electrical machines and electric drives. Methods, tools and technologies - methods and methods for studying processes in equipment in electric power and electromechanical systems and complexes, automated design, design and production. Tools and equipment - tools, devices, systems, design, operation, control, monitoring technologies.
Orientation of the educational programme	Educational and professional.
The key focus of the educational programme and specialization	General education in the field of electrical systems and vehicle complexes. Key words: *innovative technologies, unmanned systems, control system, transport, vehicles, diagnostics, development, complexes.*
Features of the programme	The educational and professional program forms the competencies of applicants who are able to apply existing and develop new methods, techniques, technologies for solving engineering problems regarding information technologies in transport, unmanned control systems, diagnostic complexes in the field of electrical systems and vehicle complexes. The peculiarity of the program is achieved due to the receipt by applicants of special program results.
4 – Graduate employability and further academic education	
Employability	Professions, professional job titles (according to the current edition of the National Classifier of Ukraine: Classifier of Occupations (DK 003:2010): - electrical engineers (2143.2); - engineers (other fields of engineering) (2149.2); - engineers in the field of electronics and telecommunications (2144.2).
Further academic education	Opportunity to continue education at the third (educational and scientific) level of higher education on a competitive basis
5 – Instruction and assessment	

Instruction and learning	Student-centered learning, problem-oriented learning, lectures, practical exercises, laboratory work, independent work, consultations, project work, preparation of qualification work.
Assessment	Current control: oral and written survey, tests, presentations of individual tasks. Final control: written exams and dif. credits, protection of course projects and 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 a certain area of professional activity or in the learning process, which involves the use of certain theories and methods of the relevant science and is characterized by the complexity and uncertainty of conditions.
General competences (GC) defined by the standard of higher education of the specialty	GC 1. Ability for abstract thinking, analysis and synthesis. GC 2. The ability to search, process and analyze information from various sources. GC 3. Ability to use information and communication technologies. GC 4. Ability to apply knowledge in practical situations. GC 5. The ability to use a foreign language in the professional field for the implementation of scientific and technical activities. GC 6. Ability to make informed decisions; GC 7. Ability to learn and acquire modern knowledge. GC 8. Ability to identify and assess risks GC 9. Ability to work autonomously and in a team. GC 10. The ability to identify feedback and adjust your actions based on them.
Professional competences of the specialty (PC) defined by the standard of higher education of the specialty	• PC 1. The ability to use the acquired theoretical knowledge, scientific and technical methods to solve scientific and technical problems and problems of the electric power industry, electrical engineering and electromechanics. • PC 2. The ability to apply existing and develop new methods, techniques, technologies and procedures for solving engineering problems in the electric power industry, electrical engineering and electromechanics. • PC 3. Ability to plan, organize and conduct scientific research in the field of electric power, electrical engineering and electromechanics. • PC 4. The ability to develop and implement measures to improve reliability, efficiency and safety in the design and operation of equipment and facilities in the electric power industry, electrical engineering and electromechanics. • PC 5. Ability to analyze technical and economic indicators and expertise of design solutions in the field of electric power industry, electrical engineering and electromechanics. • PC 6. Ability to demonstrate knowledge and understanding of the mathematical principles and methods required for use in electrical engineering, electrical engineering and electromechanics. • PC 7. Ability to demonstrate awareness of intellectual property issues and contracts in the power industry, electrical engineering and electromechanics. • PC 8. Ability to investigate and define a problem and identify constraints, including those related to environmental, sustainability, health and safety issues and risk assessments in the power industry, electrical engineering and electromechanics. • PC 9. The ability to understand and take into account the social, environmental, moral, economic and commercial considerations that affect

	the implementation of technical solutions in the electric power industry, electrical engineering and electromechanics. • PC 10. Ability to manage projects and evaluate their results. • PC 11. The ability to assess the characteristics of the reliability and efficiency of the functioning of electric power, electrical and electromechanical complexes. • PC 12. The ability to develop plans and projects to ensure the achievement of a specific goal, taking into account all aspects of the problem being solved, including the production, operation, maintenance and disposal of equipment of electrical and electromechanical complexes. • PC 13. Ability to demonstrate awareness and ability to use regulations, norms, rules and standards in the electric power industry, electrical engineering and electromechanics. • PC 14. Ability to use software for computer modeling, computer-aided design, computer-aided production and automated development or design of elements of electrical and electromechanical systems. • PC 15. The ability to publish the results of their research in scientific journals.
7 – Programme learning outcomes	
Programme learning outcomes defined by the standard of higher education of the specialty	PLO 1. Find options for improving the energy efficiency and reliability of electrical and electromechanical equipment and related complexes and systems. PLO 2. Reproduce processes in electric power, electrical and electromechanical systems in their computer simulation. PLO 3. Master new versions or new software designed for computer modeling of objects and processes in electrical power, electrical and electromechanical systems. PLO 4. Outline a plan of measures to improve the reliability, safety of operation and extend the life of electric power, electrical and electromechanical equipment and related complexes and systems. PLO 5. Analyze processes in electric power, electrical and electromechanical equipment and related complexes and systems. PLO 6. Reconstruct existing electrical networks, stations and substations, electrical and electromechanical complexes and systems in order to increase reliability, operational efficiency and extend the service life. PLO 7. Possess methods of mathematical and physical modeling of objects and processes in electric power, electrical and electromechanical systems. POP 8. Take into account the legal and economic aspects of research and innovation. PLO 9. Search for sources of resource support for additional training, scientific and innovative activities. PLO 10. Present research materials at international scientific conferences and seminars on modern problems in the field of electric power industry, electrical engineering and electromechanics. PLO 11. To substantiate the choice of the direction and methodology of scientific research, taking into account modern problems in the field of electric power, electrical engineering and electromechanics. PLO 12. Plan and carry out scientific research and innovative projects in the field of electric power, electrical engineering and electromechanics.

	PLO 13. Participation in joint research and development with foreign scientists and specialists in the field of electric power, electrical engineering, electromechanics. PLO 14. Comply with the principles and directions of the energy security development strategy of Ukraine. PLO 15. Combine different forms of research work and practical activities in order to bridge the gap between theory and practice, scientific achievements and their practical implementation. PLO 16. Observe the principles and rules of academic virtue in educational and scientific activities. PLO 17. Demonstrate an understanding of regulations, norms, rules and standards in the field of electric power, electrical engineering and electromechanics. PLO 18. Communicate freely orally and in writing in the state and foreign languages on modern scientific and technical problems of the electric power industry, electrical engineering and electromechanics. POP 19. Identify problems and limitations associated with environmental protection, sustainable development, human health and safety issues and risk assessments in the field of electricity, electrical engineering, electromechanics. PLO 20. Identify the main factors and technical problems that hinder the introduction of modern methods of managing electric power, electrical and electromechanical systems. PLO 21. Own modern methods of processing and interpreting information when conducting research on innovative activities, creating mathematical models and performing computer calculations related to the problems of electrical systems and vehicle complexes PLO 22. Demonstrate the ability to independently solve problems related to the design and development of components for unmanned control systems and vehicle diagnostic systems and the specifics of operation and operating modes electrical systems and complexes of vehicles
8 – Resource support for programme implementation	
Staffing	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.
Material and technical support	The material and technical support of the educational program meets the requirements and provides the possibility of effective training of applicants.
Information, educational and methodological support	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/. 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. 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. 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.
9 – Academic mobility	
National credit mobility	Opportunity to participate in national credit mobility programs in other universities of Ukraine, which train masters in the specialty 141 Electricity, electrical engineering and electromechanics. Opportunity to participate in national credit mobility programs in other universities of Ukraine, which train masters in the specialty 141 Electricity, electrical engineering and electromechanics.
International credit mobility	Opportunity to participate in international credit mobility programs within the framework of international academic mobility agreements (Erasmus + K1) with Lodz University of Technology, Middle East University of Technology (Ankara, Republic of Turkey)
Training of foreign applicants for higher education	In accordance with the Rules for admission to training O.M. Beketov NUUE in Kharkiv.