

Profile of the educational programme Electrotechnical Systems of Electricity Consumption in specialty 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's Degree in Electrical Energetics, Electrical Engineering and Electromechanics
Official title of the educational programme	Electrotechnical Systems of Electricity Consumption
Type of diploma and the scope of the educational programme	Master's diploma, single, 90 ECTS credits, 1 year 4 months
Accreditation certificate	Ministry of Education and Science of Ukraine Certificate of accreditation UD № 21002014 The certificate expires on 01.07.2023
Cycle/level	Second (Master's degree) level NRC of Ukraine – 7 level FQ-EHEA – the second cycle EQF-LLL – 7 level
Admission requirements	First (Bachelor) level, specialist's degree, master's degree (in another specialty)
Language (s) of teaching	Ukrainian
Language (s) of teaching	5 years
Internet address of permanent placement of the educational programme description	https://eog.kname.edu.ua
2 – Object of the educational programme	
Training of highly qualified specialists for the urban economy, able to ensure territorial development at the national, regional and local levels in the power energy industry, to develop, implement and analyse systems for optimization, forecasting, control and accounting electric energy factors.	
3 – Description of the educational programme	
Subject area	Generalized object of activity: – scientific institutions, institutions and organizations of the electric power industry, electrical engineering and

	<p>electromechanics, enterprises of the electric power complex, electrotechnical and electromechanical companies.</p> <p>Objects of study – processes of production, transmission, distribution and consumption of electricity at power plants, in electrical networks and systems; processes of electrical energy conversion in electromechanical systems; analysis of safety, increase of reliability and increase of service life of electric power, electrotechnical and electromechanical equipment.</p> <p>Learning Objectives – training professionals capable of designing, designing, operating, maintaining a safety culture, installing, adjusting and repairing, creating new equipment and implementing the latest technologies, conducting research and teaching.</p> <p>Theoretical content of the subject area – basic knowledge of electrical engineering theory, modeling and optimization of electric power, electrotechnical and electromechanical systems and complexes, their use for innovations and research of operating modes of power stations, networks and systems, electric machines and electric drives. Methods, tools and technologies - methods and means of research of processes in the equipment in the electric power and electromechanical systems and complexes, automated design, design and production. Tools and equipment - tools, devices, systems, technologies for design, operation, control, monitoring.</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 energetics, electrical engineering and Electromechanics</p> <p>Keywords: Electric power systems and networks, devices for control and accounting of electric energy, dispatch control systems, forecasting, optimization.</p>
Features of the programme	The peculiarity of the educational and professional program is achieved due to the mastering by the students of special program results, which are based on an in-depth analysis of electric energy indicators using modern devices for its control and accounting and the implementing of IT technologies to solve the problems of predictive analytics in the power electric 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 Professions (DK 003:2010):</p> <ul style="list-style-type: none"> - electrical engineers (2143.2); - engineers (other branches of engineering) (2149.2); - researcher (electrical engineering) (2143.1); - assistant (2310.1); - teacher of a higher educational institution (2310.2)
Further academic education	Graduates have the right to continue their studies at the third (educational and scientific) level of higher education on a competitive basis
5 – Instruction and assessment	
Instruction and learning	Student-oriented learning, problem-oriented learning, lectures, practical classes, laboratory classes, self-study work, consultations, work on projects, bachelor`s thesis fulfilment.

	Teaching methods: problem-solving approach, illustrations and demonstrations, partly explorative, explorative, practical.
Assessment	Current control: graphic and written works, oral examination, tests, presentations of individual tasks. Final control: written exams and differential tests, defense of term papers and projects, defense of reports on practices. Certification: public defense of qualifying work.
6 – Programme competences	
Integral competence	The ability to solve complex specialized problems and practical problems in a particular field of professional activity or in the process of study, which involves the application of certain theories and methods of the relevant science and is characterized by the complexity and uncertainty of the conditions.
General competences (GC) defined by the standard of higher education of the specialty	<ol style="list-style-type: none"> 1. Ability to think abstractly, analyze and synthesize. 2. Ability to search, process and analyze information from various sources. 3. Ability to use information and communication technologies. 4. Ability to apply knowledge in practical situations. 5. Ability to use a foreign language for scientific and technical activities. 6. Ability to make informed decisions. 7. Ability to learn and master modern knowledge. 8. Ability to identify and evaluate risks. 9. Ability to work autonomously and in a team. 10. Ability to detect feedbacks and adjust their actions to reflect them.
Professional competences of the specialty (PC) defined by the standard of higher education of the specialty	<ol style="list-style-type: none"> 1. Ability to apply the obtained theoretical knowledge, scientific and technical methods to solve scientific and technical problems and problems of power engineering, electrical engineering and electromechanics. 2. Ability to apply existing and develop new methods, techniques, technologies and procedures to solve engineering problems of power engineering, electrical engineering and electromechanics. 3. Ability to plan, organize and conduct research in the fields of power engineering, electrical engineering and electromechanics. 4. Ability to design and implement measures to improve reliability, efficiency and safety in the design and operation of electrical and electrical equipment and facilities. 5. Ability to analyze technical and economic indicators and expertise of design and engineering solutions in the field of electric power, electrical engineering and electromechanics. 6. Ability to demonstrate knowledge and understanding of mathematical principles and methods required for use in power engineering, electrical engineering and electromechanics. 7. Ability to demonstrate awareness of intellectual property issues and contracts in power engineering, electrical engineering and electromechanics. 8. Ability to investigate and identify problems and identify constraints, including those related to environmental, sustainable development, health and safety issues and risk assessments in power engineering, electrical engineering and electrical engineering.

	<p>9. Ability to investigate and identify a problem and Ability to understand and take into account social, environmental, ethical, economic and commercial considerations that influence the implementation of technical solutions in power engineering, electrical engineering and electromechanics.</p> <p>10. Ability to manage projects and evaluate their results.</p> <p>11. Ability to evaluate the reliability and efficiency of electric power, electrotechnical and electromechanical objects and systems.</p> <p>12. Ability to develop plans and projects to achieve this goal, taking into account all aspects of the problem being solved, including the production, operation, maintenance and utilization of power, electrotechnical and electromechanical equipment.</p> <p>13. Ability to demonstrate awareness and ability to use regulations, rules, rules and standards in power engineering, electrical engineering and electromechanics.</p> <p>14. Ability to use software for computer simulation, computer aided design, computer aided manufacturing, and automated design or construction of elements of power, electrotechnical, electrical, and electromechanical systems.</p> <p>15. Ability to publish the results of their research in scientific professional journals.</p>
7 – Programme learning outcomes	
<p>Programme learning outcomes defined by the standard of higher education of the specialty</p>	<ol style="list-style-type: none"> 1. Find ways to improve energy efficiency and reliability of electrical and electromechanical equipment and related complexes and systems. 2. Reproduce processes in power, electrotechnical and electromechanical systems in their computer simulation. 3. Download new versions or new software designed for computer simulation of objects and processes in power, electrical and electromechanical systems. 4. Outline a plan of measures to improve the reliability, safety of operation and extension of the life of electric power, electrical and electromechanical equipment and related complexes and systems. 5. To analyze the processes in the electric power, electrotechnical and electromechanical equipment and corresponding complexes and systems. 6. To reconstruct existing electrical networks, stations and substations, electrotechnical and electromechanical complexes and systems in order to increase their reliability, efficiency of operation and extension of life. 7. To master methods of mathematical and physical modeling of objects and processes in electric power, electrotechnical and electromechanical systems. 8. Consider the legal and economic aspects of research and innovation. 9. Search for sources of resource support for additional learning, research and innovation. 10. Present research materials at international scientific conferences and seminars on current issues in the field of electricity, electrical engineering and electromechanics. 11. To substantiate the choice of the direction and methods of scientific research taking into account the current problems in the field of electric power, electrical engineering and electromechanics.

	<p>12. Plan and execute research and innovation projects in the fields of electricity, electrical engineering and electromechanics.</p> <p>13. To participate in joint research and development with foreign scientists and experts in the field of electric power, electrical engineering, electromechanics.</p> <p>14. Adhere to the principles and directions of Ukraine's energy security strategy.</p> <p>15. Combine various forms of research and practice in order to bridge the gap between theory and practice, scientific achievements and their practical implementation.</p> <p>16. Adhere to the principles and rules of academic integrity in education and research.</p> <p>17. Demonstrate understanding of regulations, norms, rules and standards in the field of electricity, electrical engineering and electromechanics.</p> <p>18. Communicate freely verbally and in writing in state and foreign languages with modern scientific and technical problems of electric power, electrical engineering and electromechanics.</p> <p>19. Identify problems and identify constraints related to environmental, sustainable development, human health and safety issues, and risk assessments in the areas of power engineering, electrical engineering, electromechanics.</p> <p>20. Identify the main factors and technical problems that may interfere with the implementation of modern methods of control of power, electrotechnical and electromechanical systems.</p> <p>21. Carry out control and accounting of electric load distribution, active and reactive parameters of electricity, taking into account its production and losses in normal and emergency duty modes.</p>
8 – Resource support for programme implementation	
Staffing	The scientific and pedagogical staff have qualification according to educational components, experience of practical, scientific and pedagogical activity and regularly improve their scientific and pedagogical skills through participation in scientific conferences and workshops, research, internships at research institutes in Ukraine and other countries.
Material and technical support	The material and technical support of the educational program meets the requirements and ensures the possibility of effective training of applicants. Modern equipment and software of such companies as "Schneider Electric", "ABB", "Siemens" and domestic manufacturers are used to conduct high-quality master's training during laboratory and practical classes.
Information, educational and methodological support	All educational components are provided with educational and methodical materials accommodated in corresponding courses on the platform of the controlled from distance studies of Moodle. Applicants have a free access to modern professional literature and journals that is kept in collection of O.M. Beketov National University of Urban Economy in Kharkiv scientific library; bases given of Scopus and Web of Science; resources of SpringerLink, ScienceDirect from a publishing house "Elsevier", in particular on the platform of ScienceDirect – to the almost 40 thousand electronic journals and to collection over 2000 electronic monographs 2019 – 2020 edition.

	An official web-site functions in the university, where important information, electronic repository, spreads. Access is provided students and lecturers to the corporate system and world network of Internet.
9 – Academic mobility	
National credit mobility	Opportunity to participate in national credit mobility programs in other higher educational establishments of Ukraine, in which bachelors are trained in the specialty 141 Electrical power engineering, electrical engineering and electromechanics, to Statute about academic mobility of students, graduate students, doctoral students, scientifically-pedagogical and scientific workers of O.M. Beketov National University of Urban Economy in Kharkiv.
International credit mobility	Opportunity to participate in Erasmus+ International Credit Mobility international credit mobility programs with Middle Eastern University of Technology (Ankara, Turkey), Lodz Technical University (Lodz, Poland).
Training of foreign applicants for higher education	In accordance with the Rules of admission of foreign citizens to O.M. Beketov National University of Urban Economy in Kharkiv