

**The Profile of the Educational Program in Specialty 141 “Power engineering, electrical engineering and electromechanics”, the educational program “Mainline Power Networks: Management, Maintenance and Development”**

<b>General information</b>	
<b>Official name of educational institution</b>	O.M. Beketov National University of Urban Economy in Kharkiv
<b>Name of qualification and title conferred in original language</b>	Master's, Master's Degree in Power Engineering, Electrical Engineering and Electromechanics
<b>Official name of educational program</b>	«Mainline Power Networks: Management, Maintenance and Development»
<b>Type of diploma and scope of educational program</b>	Master’s diploma, single, 90 ECTS credits, 1 year 4 months
<b>Accreditation availability</b>	
<b>Cycle/level</b>	Second (Master's degree) level NRC of Ukraine – 8 level <i>FQ-EHEA</i> – the second cycle <i>EQF-LLL</i> – 7 level
<b>Access requirements</b>	First (Bachelor) level
<b>Language(s) of instruction</b>	Ukrainian
<b>Official length of program</b>	5 years
<b>Internet address for the permanent description of the educational program</b>	<a href="https://eog.kname.edu.ua">https://eog.kname.edu.ua</a>
<b>Purpose of educational program</b>	
Ability to solve complex problems and problems in professional activities in the field of power engineering, electrical engineering and electromechanics or in the process of education, which involves research and / or innovation and is characterized by uncertain conditions and requirements.	
<b>Educational program specifications</b>	
<b>Subject area</b>	<p><i>Generalized object of activity:</i> – scientific institutions, institutions and organizations of the electric power industry, electrical engineering and electromechanics, enterprises of the electric power complex, electrotechnical and electromechanical companies.</p> <p><i>Objects of study</i> – 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><i>Learning Objectives</i> – 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>

	<i>Theoretical content of the subject area</i> – 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.
<b>Orientation of the educational program</b>	Educational and professional
<b>Main focus of educational program and specialization</b>	General education in the field of power engineering, electrical engineering and electromechanics <i>Keywords:</i> Main electric networks, electric power, electrotechnical and electromechanical systems, complexes, devices and equipment, control systems.
<b>Program features</b>	The laboratory practicum is conducted on a stationary equipment and with the involvement of specialists of such companies as «Schneider Electric», «ABB», «Siemens» etc. Research, undergraduate practice, and master's work is carried out with the involvement of experts from the enterprises of the electric power industry.
<b>Professional status of graduates and access to further study</b>	
<b>Suitability for employment</b>	Jobs in the public and private sectors in various fields of activity, including: production, repair, maintenance and adjustment of electrical equipment; design of electricity and power supply systems; introduction of modern energy efficient technologies.
<b>Access to further study</b>	Ph.D. degree
<b>Instruction and assessment</b>	
<b>Teaching and learning</b>	Lectures, laboratory work, practical classes, independent work on the basis of textbooks, manuals and lecture notes, consultations with teachers, preparation of master's work.
<b>Assessment</b>	Written exams, lab reports, presentations, current control, protection of qualification work.
<b>Program learning outcomes</b>	
<b>Integral competence</b>	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.
<b>General competencies (GC)</b> , defined by the draft higher education standard of specialty	<ol style="list-style-type: none"> <li>1. Ability to think abstractly, analyze and synthesize.</li> <li>2. Ability to search, process and analyze information from various sources.</li> <li>3. Ability to use information and communication technologies.</li> <li>4. Ability to apply knowledge in practical situations.</li> <li>5. Ability to use a foreign language for scientific and technical activities.</li> <li>6. Ability to make informed decisions.</li> <li>7. Ability to learn and master modern knowledge.</li> <li>8. Ability to identify and evaluate risks.</li> <li>9. Ability to work autonomously and in a team.</li> <li>10. Ability to detect feedbacks and adjust their actions to reflect them.</li> </ol>

<p><b>General competencies</b>, defined by the higher education institution</p>	<ol style="list-style-type: none"> <li>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.</li> <li>2. Ability to apply existing and develop new methods, techniques, technologies and procedures to solve engineering problems of power engineering, electrical engineering and electromechanics.</li> <li>3. Ability to plan, organize and conduct research in the fields of power engineering, electrical engineering and electromechanics.</li> <li>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.</li> <li>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.</li> <li>6. Ability to demonstrate knowledge and understanding of mathematical principles and methods required for use in power engineering, electrical engineering and electromechanics.</li> <li>7. Ability to demonstrate awareness of intellectual property issues and contracts in power engineering, electrical engineering and electromechanics.</li> <li>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.</li> <li>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.</li> <li>10. Ability to manage projects and evaluate their results.</li> <li>11. Ability to evaluate the reliability and efficiency of electric power, electrotechnical and electromechanical objects and systems.</li> <li>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.</li> <li>13. Ability to demonstrate awareness and ability to use regulations, rules, rules and standards in power engineering, electrical engineering and electromechanics.</li> <li>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.</li> <li>15. Ability to publish the results of their research in scientific professional journals.</li> </ol>
<p><b>Professional competence of specialty</b> determined by the institution of higher education</p>	<ol style="list-style-type: none"> <li>16. Ability to evaluate the cost-effectiveness of an investment project technical assignment.</li> <li>17. Ability to manage implementation and evaluate the effectiveness of investment projects.</li> <li>18. Ability to manage energy infrastructure projects for backbone network development.</li> <li>19. Ability to apply the methods and tools of process control in the modern electricity market.</li> </ol>

	20. The ability to design, set up and service your digital power system equipment.
<b>Program learning outcomes</b>	
<p><b>Program learning outcomes</b> defined by, defined by the draft higher education standard of specialty</p>	<ol style="list-style-type: none"> <li>1. Find ways to improve energy efficiency and reliability of electrical and electromechanical equipment and related complexes and systems.</li> <li>2. Reproduce processes in power, electrotechnical and electromechanical systems in their computer simulation.</li> <li>3. Download new versions or new software designed for computer simulation of objects and processes in power, electrical and electromechanical systems.</li> <li>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.</li> <li>5. To analyze the processes in the electric power, electrotechnical and electromechanical equipment and corresponding complexes and systems.</li> <li>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.</li> <li>7. To master methods of mathematical and physical modeling of objects and processes in electric power, electrotechnical and electromechanical systems.</li> <li>8. Consider the legal and economic aspects of research and innovation.</li> <li>9. Search for sources of resource support for additional learning, research and innovation.</li> <li>10. Present research materials at international scientific conferences and seminars on current issues in the field of electricity, electrical engineering and electromechanics.</li> <li>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.</li> <li>12. Plan and execute research and innovation projects in the fields of electricity, electrical engineering and electromechanics.</li> <li>13. To participate in joint research and development with foreign scientists and experts in the field of electric power, electrical engineering, electromechanics.</li> <li>14. Adhere to the principles and directions of Ukraine's energy security strategy.</li> <li>15. Combine various forms of research and practice in order to bridge the gap between theory and practice, scientific achievements and their practical implementation.</li> <li>16. Adhere to the principles and rules of academic integrity in education and research.</li> <li>17. Demonstrate understanding of regulations, norms, rules and standards in the field of electricity, electrical engineering and electromechanics.</li> <li>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.</li> <li>19. Identify problems and identify constraints related to environmental, sustainable development, human health and safety issues, and risk</li> </ol>

	<p>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>
<b>Program learning outcomes</b> defined by the higher education institution	<p>21. Manage employee groups when implementing projects.</p> <p>22. To develop investment projects, development programs and ensure their implementation.</p> <p>23. Manage energy infrastructure projects for backbone network development.</p> <p>24. To possess theoretical and practical methods and tools for managing the processes of the modern electricity market.</p> <p>25. Possess methods of digital signal processing, design, tuning and maintenance of digital equipment of power systems.</p> <p>26. To take into account the legal aspects of the development of electricity in the context of European integration.</p>
<b>Resource support for program implementation</b>	
<b>Staffing</b>	The educational program is provided by scientific-pedagogical workers who have a degree and academic rank in the specialties included in the list of specialties 141 Power engineering, electrical engineering and electromechanics, also specialists in the power industry.
<b>Logistics</b>	To provide quality training of bachelors, modern equipment and software of companies such as «Schneider Electric», «ABB», «Siemens».
<b>Information and methodological support</b>	Educational and methodological support is applied, which corresponds to the current norms and the latest tendencies of development in the electric power industry. Elements of distance learning are additionally used.
<b>Academic mobility</b>	
<b>National credit mobility</b>	Opportunity to participate in national credit mobility programs at other universities in the country where bachelors are trained in the specialty 141 Power engineering, electrical engineering and electromechanics, in the framework of educational trainings, (seminars, summer and winter schools, etc.), organized and conducted by such universities and facilitating the acquisition of professional competences, with the possibility of enrollment of educational achievements in the programs of undergraduate practice.
<b>International credit mobility</b>	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)
<b>Training of foreign higher education applicants</b>	