

**The Profile of the Educational Program in Specialty 141 «Power engineering, electrical engineering and electromechanics»,
the educational program
«Power engineering, electrical engineering and electromechanics»**

General information	
Official name of educational program	Power engineering, electrical engineering and electromechanics
Specialty	141 Power engineering, electrical engineering and electromechanics
Branch of knowledge	14 Electrical Engineering
Higher education degree and title in the original language	Master, Master of power engineering, electrical engineering and electromechanics
Type of diploma and scope of educational program	Master's diploma, single, 90 ECTS credits, 1 year 9 months
Accreditation availability	Ministry of Education and Science of Ukraine Certificate of accreditation № 21008899 The certificate expires on 01.07.2024 p.
Cycle/level	Second (Master's degree) level EQF-LLL level 7
Access requirements	First (Bachelor) level
Language(s) of instruction	Ukrainian
Official length of program	5 years
Purpose of educational program	
	Formation of a set of knowledge, skills and competences for higher education applicants for use in professional activity in the field of power engineering, electrotechnical and electromechanical systems and complexes through theoretical and practical training.
Educational program specifications	
Subject area	<p><i>Object of activity</i> – scientific institutions, institutions and organizations of the electric power industry, electrical engineering and electromechanics of the enterprise of the power engineering, complex, electrotechnical and electromechanical companies.</p> <p><i>Object of study</i> – processes of production, transmission, distribution and consumption of electricity and processes of its transformation in electromechanical systems with increasing reliability and use of resource-saving technologies in power engineering, electrotechnical and electromechanical systems.</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> <p><i>Theoretical content of the subject area</i> - basic knowledge of the theory of electrical engineering, modeling and optimization of electric power, electrotechnical and electromechanical systems and complexes, their use for innovation and research of operating modes of power plants, networks and systems, electric machines and electric drives.</p> <p><i>Methods, tools and technologies</i> - methods and tools for research of processes in equipment in electric power and electromechanical systems</p>

	and complexes, automated design, design and production. <i>Tools and equipment</i> - tools, devices, systems, technologies for design, operation, control, monitoring.
Orientation of the educational program	Educational and scientific
Main focus of educational program and specialization	Special education and training in the field of power engineering, electrical engineering and electromechanics. Keywords: power, electrotechnical and electromechanical systems, complexes, devices and equipment, control systems, city and sports lighting, lighting management systems, computer information technology in lighting, stage lighting and lighting effects; <i>electromechanical systems of automation, electric drive, power converters, electromechatronic systems, microprocessor technology, diagnostics, power supply systems, automatic control</i>
Program features	The laboratory practicum is conducted on a stationary equipment and with the involvement of specialists of such companies as «Schneider Electric», «ABB», «Siemens», Elko (Czech Republic), iGuzzini (Italy), TOV «LED Technology Ukraine » and others using computer-aided measurement methods. requires special practice in the operation and assembly of electromechanical systems of automation and electric drive
Professional status of graduates and access to further study	
Suitability for employment	Occupations, professional job titles (according to the current version of the National Classifier of Ukraine: Occupational qualifier (DK 003:2010): - electrical engineers (2143.2); - engineers (other engineering fields) (2149.2); - researcher (electrical engineering) (2143.1); - assistant (2310.1); - teacher of higher education institution (2310.2); - chief executives and technical heads of manufacturing units in the industry (1221.1); - heads (other supervisors) and masters of production sites (units) in the industry (1221.2); - the main specialists of the research units for scientific and technical preparation of production (1237.1); - heads (leader) of research units for scientific and technical preparation of production (1237.2)
Access to further study	Ph.D. degree
Instruction and assessment	
Teaching and learning	Lectures, laboratory work, practical classes, independent work on the basis of textbooks, manuals and lecture notes, consultations with teachers, preparation of master's work.
Assessment	Written exams, lab reports, presentations, current control, protection of qualification work.
Program learning outcomes	
Program learning outcomes defined by the standard	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.

	<p>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.</p> <p>5. To analyze the processes in the electric power, electrotechnical and electromechanical equipment and corresponding complexes and systems.</p> <p>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.</p> <p>7. To master methods of mathematical and physical modeling of objects and processes in electric power, electrotechnical and electromechanical systems.</p> <p>8. Consider the legal and economic aspects of research and innovation.</p> <p>9. Search for sources of resource support for additional learning, research and innovation.</p> <p>10. Present research materials at international scientific conferences and seminars on current issues in the field of electricity, electrical engineering and electromechanics.</p> <p>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> <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>Program learning outcomes defined by the higher education institution</p>	<p style="text-align: center;"><i>Bloc «Electrotechnical systems of power consumption»</i></p> <p>21. Ability to analyze processes in the power supply systems of industrial and domestic objects.</p> <p>22. Apply state-of-the-art devices and devices to meet the challenges of improving electricity quality.</p> <p>23. Possess modern software packages for modeling objects and processes in power systems.</p> <p style="text-align: center;"><i>Bloc «Lighting and light sources»</i></p> <p>24. Download new versions or new software designed for computer simulation of objects and processes, including measurement technology</p>

	<p>for lighting systems.</p> <p>25. Ability to reconstruct existing lighting systems and systems to improve their reliability, efficiency, and lengthen life.</p> <p>26. To master the methods of mathematical and physical modeling of objects and processes in lighting systems.</p> <p><i>Bloc «Electromechanical automation systems and electric drive»</i></p> <p>27 To use electromagnetic processes in power semiconductor converters of electric energy, to have methods of their automatic control and to carry out calculations of parameters.</p> <p>28. To create impulse models and to use methods of automatic control of electric converters in particular on the basis of microprocessor systems.</p> <p>29. To use measures and methods of diagnosing electromechatronic systems and their elements.</p>
Resource support for program implementation	
Staffing	<p>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.</p> <p><i>More than 70% of scientific-pedagogical staff involved in teaching vocationally-oriented disciplines have degrees in the specialty</i></p>
Logistics	<p>To provide quality training of bachelors, modern equipment and software of companies such as «Schneider Electric», «ABB», «Siemens».</p> <p>By the order of the Rector of the O.M. Beketov NUUE from 10.09.2014 2 specialized world-class laboratories have been established and are operating successfully. One of these laboratories was created to solve the problems of certification and certification of lighting equipment and performance based on the work of lighting projects, the second is a laboratory aimed at solving problems related to the formation of the lighting environment and its design.</p> <p><i>Use of modern equipment by leading electromechanical companies, in particular Schneider Electric</i></p>
Information and methodological support	<p>The course equipment is computerized, the distance learning system is widely implemented, the courses are certified.</p>
Academic mobility	
National credit mobility	<p>Opportunity to participate in national credit mobility programs at other universities of the country where masters are trained in the specialty 141 Power engineering, electrical engineering and electromechanics, within the framework of educational trainings, 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 (up to 12 ECTS credits).</p>
International credit mobility	-
Training of foreign higher education applicants	-