MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

KYIV NATIONAL UNIVERSITY OF TECHNOLOGIES AND DESIGN

**APPROVED BY THE ACADEMIC COUNCIL**
**Chairman of the Academic Council KNUTD**

**_____ Ivan GRYSHCHENKO**

**(minutes «____» _____ 2021 №___ )**

# EDUCATIONAL-PROFESSIONAL PROGRAM
## ELECTRICAL HOUSEHOLD APPLIANCES

Level of higher education Second

Degree of higher education Master

Knowledge area 14 Electrical engineering

Specialty 141 Electrical energetics, electrical engineering and electromechanical engineering

Qualification Master in Electrical energetics, electrical engineering and electromechanical engineering

Kyiv 2021

**1. Profile of the educational-professional program "Electrical energetics, electrical engineering and electromechanics engineering"**

| 1 – General information | |
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| **Full names of the higher education institution and structural unit** | Kyiv National University of Technologies and Design, Department of Computer engineering and electromechanics. |
| **Degree of higher education and qualification** | Level of higher education - second.<br>Degree of higher education - master.<br>Knowledge area - 12 Information technologies.<br>Specialty - 123 Computer engineering. |
| **Diploma and the scope** | Master`s Diploma, unitary, 90 credits ECTS. |
| **Accreditation** | – |
| **Cycle/level** | The seventh level according to National Qualifications Framework. |
| **Prerequisites** | Bachelor's degree. |
| **Language** | Ukrainian. |
| **The validity of the study program** | – |
| **Weblink to the study program description** | http://en.knutd.edu.ua/ekts/ |
| **2 – The purpose of the study program** | |
| Training of specialists with in-depth knowledge, as well as basic and professional competencies in the field of power engineering, electrical engineering and electromechanics, aimed at acquiring the student's knowledge, skills and abilities necessary for employment and ensuring his ability to work.<br>The main objectives of the program are to train specialists capable of solving complex research and innovation problems in the field of power engineering, electrical engineering and electromechanics; formation and development of general and professional competencies in the field of power engineering, electrical engineering and electromechanics, aimed at obtaining software learning outcomes necessary for research, design, production, use and maintenance of electrical appliances. | |
| **3 – Characteristics of the study program** | |
| **Subject area** | The program is focused on the formation of applicants for competencies to acquire deep knowledge, skills and abilities in the specialty.<br>Compulsory educational components - 73%, of which: disciplines of general training - 6%, vocational training - 50%, practical training - 12%, learning a foreign language - 6%, diploma design - 26%. Disciplines of free choice of students - 27% are selected from the university catalog in accordance with the approved procedure at the University. |
| **Program orientation** | Educational-professional for master's degree preparation. |
| **The main focus of the program** | Emphasis is placed on the formation and development of professional competencies in the field of power engineering, electrical engineering and electromechanics; study of theoretical and methodological provisions, organizational and practical tools for research, design, production, use and maintenance of electrical appliances. |
| **Study program features** | The educational and professional program develops theoretical and practical training in the field of design, creation and maintenance of electrical appliances, as well as the introduction of innovative information technologies in the domestic sphere. |
| **4 – Graduate's suitability for employment and further study** | |

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| **The employment suitability** | The graduate is suitable for employment in enterprises, organizations and institutions operating in the field of power engineering, electrical engineering and electromechanics. Professional names of works that can be performed by the applicant: site electrician; shop electrician; electromechanic; site electrician; electromechanic of the radio navigation system; energy; site power engineer; shop engineer; electrician; energy technician. | |
| **Further study** | Graduates have the right to continue their education at the third (educational and scientific) level of higher education and to acquire additional qualifications in the system of adult education. | |
| **5 – Teaching and grading** | | |
| **Teaching and learning** | Student-centered and problem-oriented learning, learning through research and undergraduate practice and self-study are used. The system of teaching methods is based on the principles of purposefulness, binary - active direct participation of research and teaching staff and students of higher education.<br>Forms of organization of the educational process: lecture, seminar, practical, laboratory classes, practical training, independent work, consultation, development of professional projects (works). | |
| **Grading** | Testing of knowledge, presentations, reports on laboratory works, reports on practice, control works, course (project) works, tests, examinations, public defense of qualifying work. | |
| **6 – Program competencies** | | |
| **Integral competence (IC)** | **Ability to solve research and / or innovation problems in the field of power engineering, electrical engineering and electromechanics or in the learning process, which involves research and / or innovation and is characterized by uncertainty of conditions and requirements.** | |
| **General competencies (GC)** | **GC 1** | Ability to abstract thinking, analysis and synthesis. |
| | **GC 2** | 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** | Ability to use a foreign language to carry out scientific and technical activities. |
| | **GC 6** | Ability to make informed decisions. |
| | **GC 7** | Ability to learn and master modern knowledge. |
| | **GC 8** | Ability to identify and assess risks. |
| | **GC 9** | Ability to work independently and in a team. |
| | **GC 10** | Ability to detect feedback and adjust your actions based on them. |
| **Professional competencies (PC)** | **PC 1** | Ability to apply the acquired theoretical knowledge, scientific and technical methods to solve scientific and technical problems and problems of electric power, electrical engineering and electromechanics in relation to household appliances. |
| | **PC 2** | Ability to apply existing and develop new methods, techniques, technologies and procedures to solve engineering problems of power engineering, electrical engineering and electromechanics in relation to electrical appliances. |
| | **PC 3** | Ability to plan, organize and conduct research in the field of power engineering, electrical engineering and electromechanics in relation to electrical appliances. |
| | **PC 4** | Ability to develop and implement measures to improve the reliability, efficiency and safety in the design and operation of |

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| | | equipment and facilities of electricity, electrical engineering and electromechanics, including electrical appliances. |
| | **PC 5** | Ability to analyze technical and economic indicators and examination of design decisions in the field of power engineering, electrical engineering and electromechanics in relation to electrical appliances. |
| | **PC 6** | Ability to demonstrate knowledge and understanding of mathematical principles and methods required for use in electrical engineering, electrical engineering and electromechanics in relation to electrical appliances. |
| | **PC 7** | Ability to demonstrate awareness of intellectual property and contracts in electricity, electrical engineering and electromechanics, including electrical appliances. |
| | **PC 8** | Ability to investigate and identify problems and identify limitations, including those related to nature protection, sustainable development, health and safety, and risk assessments in electricity, electrical engineering, and electromechanics for electrical appliances. |
| | **PC 9** | Ability to understand and take into account social, environmental, ethical, economic and commercial considerations that affect the implementation of technical solutions in electricity, electrical engineering and electromechanics in relation to electrical appliances. |
| | **PC 10** | Ability to manage projects and evaluate their results. |
| | **PC 11** | Ability to evaluate indicators of reliability and efficiency of operation of electric power, electrotechnical and electromechanical objects and systems, including household appliances. |
| | **PC 12** | Ability to develop plans and projects to ensure the achievement of a specific goal, taking into account all aspects of the problem to be solved, including production, operation, maintenance and disposal of equipment for power, electrical and electromechanical systems, including electrical appliances. |
| | **PC 13** | Ability to demonstrate awareness and ability to use regulations, norms, rules and standards in power engineering, electrical engineering and electromechanics, including electrical appliances. |
| | **PC 14** | Ability to use software for computer modeling, computer-aided design, automated production and automated development or design of elements of electrical, electrical and electromechanical systems. |
| | **PC 15** | Ability to publish the results of their developments and research in professional and scientific publications. |
| **7 – Program learning outcomes** | | |
| **Knowledge and understanding:** | | |
| **PLO 1** | Know the concepts, concepts, principles of research, design, production, use and maintenance of electrical appliances. | |
| **Skills:** | | |
| **PLO 2** | Find options to increase the energy efficiency and reliability of electrical, electrical and electromechanical equipment and related complexes and systems, including electrical appliances. | |
| **PLO 3** | Reproduce processes in electrical, electrical and electromechanical systems, including electrical appliances, in their computer simulation. | |

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| **PLO 4** | Master new versions or new software designed for computer modeling of objects and processes in electrical, electrical and electromechanical systems, including electrical appliances. |
| **PLO 5** | Outline a plan of measures to improve the reliability, operational safety and resource life of electrical, electrical and electromechanical equipment and relevant complexes and systems, including electrical appliances. |
| **PLO 6** | Analyze the processes in electrical, electrical and electromechanical equipment and relevant complexes and systems, including electrical appliances. |
| **PLO 7** | Reconstruct existing electrical networks, stations and substations, electrical and electromechanical complexes and systems, including electrical appliances, in order to increase their reliability, operational efficiency and resource life. |
| **PLO 8** | Apply methods of mathematical and physical modeling of objects and processes in electrical, electrical and electromechanical systems, including electrical appliances. |
| **PLO 9** | Take into account the legal and economic aspects of research and innovation. |
| **PLO 10** | Search for sources of resource support for additional training, research and innovation. |
| **PLO 11** | Present research materials at international scientific conferences and seminars on current issues in the field of power engineering, electrical engineering and electromechanics, including electrical appliances. |
| **PLO 12** | To substantiate the choice of direction and methods of scientific research taking into account modern problems in the field of electric power, electrical engineering and electromechanics, including household appliances. |
| **PLO 13** | Plan and implement research and innovative projects in the field of power engineering, electrical engineering and electromechanics, including electrical appliances. |
| **PLO 14** | Search for information in various sources to solve problems of electric power, electrical engineering and electromechanics, including electrical appliances, analyze and evaluate this information. |
| **Forming reasoning:** | |
| **PLO 15** | Adhere to the principles and rules of academic integrity in educational and scientific activities. |
| **PLO 16** | Demonstrate an understanding of regulations, norms, rules and standards in the field of power engineering, electrical engineering and electromechanics. |
| **PLO 17** | Fluently communicate orally and in writing in Ukrainian and one of the foreign languages (English, German, Italian, French, Spanish) when discussing professional issues, research and innovation in the field of information technology. |
| **PLO 18** | Clearly and unambiguously convey one's own knowledge, conclusions and arguments on electricity, electrical engineering and electromechanics and related intersectoral issues to specialists and non-specialists, in particular to students. |
| **PLO 19** | Identify the main factors and technical problems that may hinder the introduction of modern methods of control of electrical, electrical and electromechanical systems, including electrical appliances. |
| **8 – Resources for program implementation** | |
| **Staffing** | All teaching staff who provide this scientific study program correspond to the taught courses profile by qualification and have got the necessary experience of pedagogical activity and practical work. High professionals with experience in research / management / innovation / creative work in the consumer industry field are involved in the training. |
| **Logistics** | Logistics allows to fully ensure the educational process throughout the study program cycle. The condition of the classes and laboratories is certified with sanitary and technical passports that comply with existing regulations. |

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| **Information and methodical support** | The program is fully provided with an educational and methodical complex of all courses, which availability is presented in the modular environment of the educational process of the University. |
| **9 – Academic mobility** | |
| **National credit mobility** | The program provides the possibility for academic mobility in some components provided the acquisition of general and / or professional competencies. |
| **International credit mobility** | The program develops prospects for internships and participation in research projects and academic mobility programs abroad. |
| **Studying for foreign students** | Studying of foreign students is according to accredited programs. |

## 2. The list of components of the educational program and their logical sequence

### 2.1. List of components of the educational-professional program

| Code | Components of the study program (study courses, courses projects (works), practices, qualification work) | Number of credits | Form of control |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| **Compulsory components** | | | |
| General courses cycle | | | |
| CC 1 | Business Foreign Language (english, german, france) | 3 | credit |
| CC 2 | Methodology of modern scientific studies with the basics of intellectual property | 3 | exam |
| | Total for the cycle | 6 | |
| Professional courses cycle | | | |
| CC 3 | Electrical household appliances | 6 | exam |
| CC 4 | Smart home information technology | 6 | exam |
| CC 5 | Automated design of electrical household appliances | 6 | exam |
| CC 6 | Service of electrical household appliances | 6 | exam |
| CC 7 | Research practice | 6 | credit |
| CC 8 | Pre-diploma practice | 9 | credit |
| CC 9 | Master's thesis (project) | 21 | attestation |
| | Total for the cycle | 60 | |
| | **Total credits for Compulsory components** | **66** | |
| **Elective components** | | | |
| CSC | Courses for student`s choice | 24 | credit |
| | **TOTAL CREDITS** | **90** | |