

# NATIONAL TECHNICAL UNIVERSITY “KHARKIV POLYTECHNIC INSTITUTE”

## Faculty of Electric Machine Industry Department of Electrical Apparatus



# NTU "KhPI" INFRASTRUCTURE

**The main part of NTU "KhPI" is located in the campus, in which there are about 30 buildings with well-equipped classrooms, laboratories and computer classes, one of the best libraries in Ukraine, dining room, cupboards, and other infrastructure facilities.**

**Not far from the school campus comfortable dormitories are located.**

**In his spare time, students have the opportunity to practice different sports in one of the best in Ukraine, sports complex with 50-meter swimming pool, indoor track and field arena, specialized facilities, etc.**

**In the Palace of students there are numerous clubs and groups, in which students develop their creative abilities.**





# DEPARTMENT OF ELECTRICAL APPARATUS

## LEVELS OF HIGHER EDUCATION, FIELDS OF STUDY

The Department provides education in three levels of higher education:

- Bachelor – 4 years;
- Master – (4+) 2 years;
- Doctor of Philosophy (PhD) – (4+2+) 4 years.

Specialisations (Fields of study):

- Electrical Apparatus (switchgear, controlgear, fuses, assemblies of such devices, etc.);
- Electrical Home Appliances (heating, conditioning, cooking, etc.).

Head of Department: Prof. Dr.-Eng.  
Borys V. Klymenko



# DEPARTMENT OF ELECTRICAL APPARATUS MODERN EDUCATIONAL EQUIPMENT

In 2016 Department received a grant from the Alexander von Humboldt Foundation (Germany) for the purchase of scientific equipment in the amount of 20 000 Euros.

Thanks to the funding from the Foundation the Department acquired numerous examples of modern electrical devices (electromechanical and semiconductor switching, control and protection devices of the production of leading European companies, such as ABB, Legrand, GE, etc.), examples of modern measuring techniques (digital oscilloscopes, the imager, sound meter, fluxmeter, multimeters, etc.), examples of innovative technological equipment and Appliances (one of the first in NTU "KhPI" 3D printer, induction cooker, etc.).

Purchased equipment is used for radical modernization of scientific and educational laboratories of the Department for the purpose of educational process and scientific research on a level with the highest world standards





# DEPARTMENT OF ELECTRICAL APPARATUS PROFESSIONAL EDUCATION

**KEY DISCIPLINE THAT STUDENTS STUDY  
ON BACHELOR LEVEL OF HIGHER EDUCATION  
(SPECIALIZATION "ELECTRICAL APPARATUS"):**

**Informatics**

**Information technologies**

**Technical mechanics**

**Mechanical engineering technology**

**Computer aided design**

**Theoretical foundations of electrical engineering**

**Theory of electromagnetic field**

**Electrical engineering materials**

**Fundamentals of metrology and electrical measurements**

**Electric machines**

**Foundations of electronics**

**Fundamentals of electric drive**

**Fundamentals of electric power industry**

**Electromagnetic and induction-dynamic devices**

**Electromechanical switching devices and assemblies**

**Semiconductor switching devices and automation elements**

**Contact-arcing systems and thermal processes in electrical apparatus**

**Microprocessors and microcontrollers**

**Microcontroller programming**

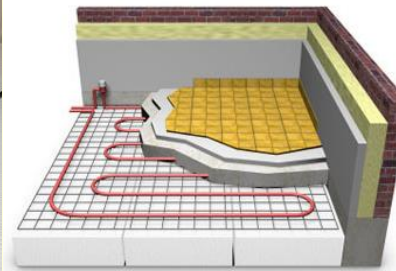
**Microprocessor devices**



# DEPARTMENT OF ELECTRICAL APPARATUS PROFESSIONAL EDUCATION

**KEY DISCIPLINE THAT STUDENTS STUDY  
ON BACHELOR LEVEL OF HIGHER EDUCATION  
(SPECIALIZATION "ELECTRICAL HOME APPLIANCES"):**

**Informatics  
Information technologies  
Technical mechanics  
Mechanical engineering technology  
Computer aided design  
Theoretical foundations of electrical engineering  
Theory of electromagnetic field  
Electrical engineering materials  
Fundamentals of metrology and electrical measurements  
Electric machines  
Foundations of electronics  
Fundamentals of electric drive  
Fundamentals of electric power industry  
Fundamentals of electrical home appliances  
Electrical apparatus  
Household electromechanical apparatus  
Electric power supply of civil constructions  
Electrical home appliances  
Automation elements in electrical home appliances  
Servicing and repairs of electrical home appliances  
Microprocessors and microcontrollers  
Microcontroller programming  
Microprocessor devices**



# DEPARTMENT OF ELECTRICAL APPARATUS PROFESSIONAL EDUCATION

**KEY DISCIPLINE THAT STUDENTS STUDY  
ON MASTER LEVEL OF HIGHER EDUCATION  
(SPECIALIZATION "ELECTRICAL APPARATUS"):**

**Methods of mathematical and computer modeling**

**Fundamentals of scientific research**

**Microprocessor devices in electrical apparatus**

**Certification and accreditation of electrical apparatus**

**Information technologies and software packages in computer aided design**

**Current state and prospects of development of electrical apparatus**

**Resource saving and ecologically safe technologies**

**Production technology of electrical apparatus**

**Information technologies in production of electrical apparatus**

**Hybrid switching devices**

**Design of electrical apparatus**

**Reliability and diagnostics of electrical apparatus**

**Novel methods of information search and processing**





# DEPARTMENT OF ELECTRICAL APPARATUS PROFESSIONAL EDUCATION

**KEY DISCIPLINE THAT STUDENTS STUDY  
ON MASTER LEVEL OF HIGHER EDUCATION  
(SPECIALIZATION "ELECTRICAL HOME APPLIANCES"):**

**Methods of mathematical and computer modeling**

**Fundamentals of scientific research**

**Electronic and microprocessor devices in electrical home appliances**

**Testing, certification and accreditation of electrical home appliances**

**Information technologies and software packages in computer aided design**

**Current state and prospects of development of electrical home appliances**

**Automatic control systems of electrical home appliances**

**Methods of investigations and testing of electrical home appliances**

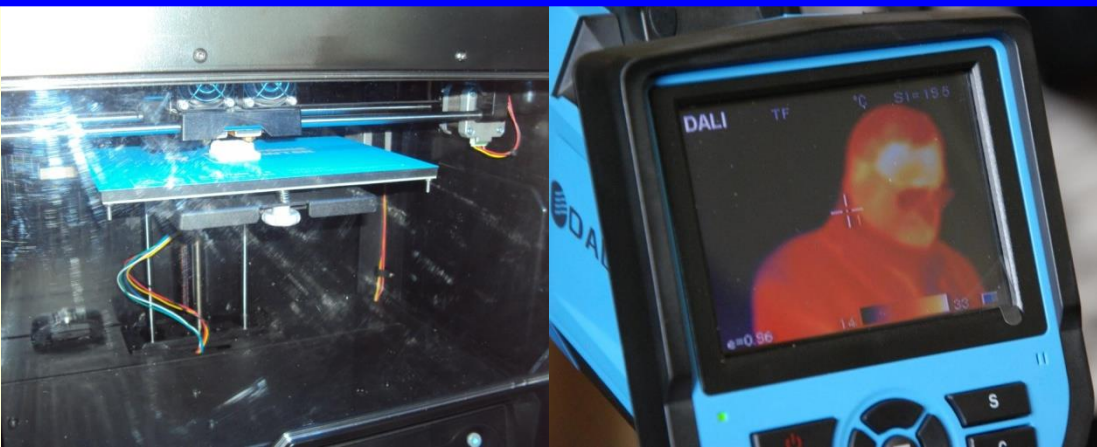
**Resource saving and ecologically safe technologies**

**Production technology of electrical home appliances**

**Design of electrical home appliances**

**Reliability and diagnostics of electrical home appliances**

**Novel methods of information search and processing**





# DEPARTMENT OF ELECTRICAL APPARATUS COMPUTER TRAINING

In addition to professional education, our students:

- Prepared programming skills and calculations using mathematical packages Matlab, Simulink, Maple, FEMM, Electronic Workbench;
- Studying the design and construction packages AutoCAD modeling software, 3D Compass;
- Learn microcontrollers and programming and the development of microprocessor-based devices;
- Get in-depth knowledge of operating systems Windows, Linux;
- Learn to develop their own websites and presentations of ABBYY, Adobe, Power Point;
- Learn how to work with Access databases and receive Internet application skills.



# DEPARTMENT OF ELECTRICAL APPARATUS RESEARCH AND INTERNATIONAL RELATIONS

The main scientific activities of the department are:  
development of advanced designs of LV and MV vacuum switching devices with polarized electromagnetic actuators;  
study of electromagnetic and thermal processes in induction heating for industrial and household purpose systems.

Along these lines, the Department actively cooperates with domestic manufacturing enterprises ( "AVM Ampere" - Kremenchug, "Electrodynamics" - Kharkiv). Since 1998, the Department holds an annual International Symposium "Problems of power engineering, electrical engineering and electromechanics" (SIEMA).

The Department collaborates with the offices of Europe's leading electrical engineering companies. It has become a tradition to hold workshops at the symposium of these companies, which presented their latest developments.

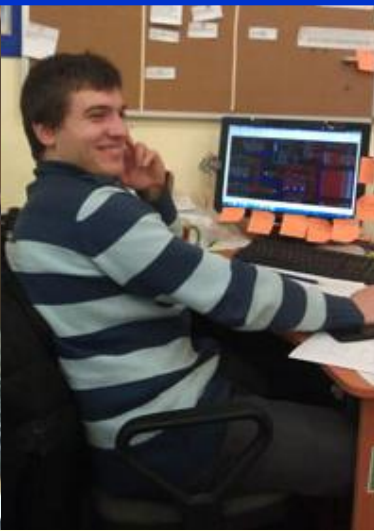
Inter-institutional agreement in the framework of Erasmus+ between National Technical University "KhPI" and the Polytechnic School of the University of Nantes (France) for 2017-2020 is prepared.





# GRADUATES EMPLOYMENT PERSPECTIVE

**Graduates are employed in manufacturing plants, project organizations, research institutes of electrical engineering, energy, and urban electric transport, as well as in private companies, specializing in the development, production and sale of modern electrical equipment and appliances.**



# CONTACTS

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