



# **ENTRANT'S GUIDE TO POSTGRADUATE STUDIES**

**2021**

## ABOUT THE UNIVERSITY

Kharkiv National University of Radio Electronics, which celebrated its 90th anniversary in 2020, is a leading technical institution of higher education in Ukraine, with about 7,000 students from more than 40 countries.

KHNURE is included in the world ranking of TOP-800 + Times Higher Education World University Ranking, TOP-10 institutions of higher education in Ukraine according to the provided recommendations for the budget, and ranks 9th in the «TOP-200 Ukraine 2020». And the official Instagram page is the first in Ukraine in terms of the number of followers.

KHNURE partners are more than 30 leading companies in the world. University graduates work in many well-known companies, including Boeing, Google, Microsoft and others.

### Kharkiv National University of Radio Electronics trains specialists in 17 specialties:

- Economics
- Management
- Applied Mathematics
- Software engineering
- Computer Science
- System analysis
- Cybersecurity
- Information systems and technologies
- Automation and computer-integrated technologies
- Metrology and information-measuring equipment
- Micro- and nanosystem technology
- Electronics
- Biomedical Engineering
- Telecommunications and radio engineering
- Avionics
- Publishing and printing

The infrastructure of KHNURE is set up to realize the educational, scientific, creative and sports opportunities of students.

To conduct physical education classes, the Department of Physical Education and Sports has an excellent sports base of European level: 2 game halls, boxing and aerobics hall, wrestling hall, football field with artificial turf, gyms, the largest chess and checkers club in Ukraine «Shahrad», a stadium and modern gyms in each dormitory. Students can choose any section, including: badminton, boxing, basketball, sambo, powerlifting, athletics, football, mini-football, volleyball, tennis, table tennis, martial arts, tourism, chess, aerobics.

To realize creative opportunities, a student club was founded - a creative association of the university, where there is an opportunity to join a choir, theater, circus group or dance in many areas - from ballroom to several types of modern.

In the field of education and research, students have the opportunity to join one of the international programs: ERASMUS +, double degree, international semester, internship and internship programs, academic mobility. Students have the opportunity to try themselves as a student at a university in Germany, Sweden, Spain, the Czech Republic, Turkey, Poland, France and Denmark.

Students can also develop their educational potential in the Synergy Science Park, which was the first in Ukraine to join ISAP. The park covers an area of 1,500 square meters and amazes with its computer and lecture halls, modern laboratories for robotics, blockchain, virtual reality and 3D modeling, rooms for presentations of projects and negotiations, as well as a cinema hall.

## FORM AND FINANCING OF EDUCATION

Preparation of applicants for higher education for the degree of Doctor of Philosophy is carried out at the University by full-time (day, evening) and correspondence forms of education by state order and at the expense of individuals and / or legal entities. Training by state order is carried out exclusively on a full-time basis.

## ENTRANCE EXAMS

- Exam in the specialty (in the amount of training programs for a specialist or master, which correspond to the chosen specialty);
- Testing in one of the foreign languages of your choice (English, German, French);
- Testing in philosophy.

## ORIENTATION OF EDUCATIONAL AND SCIENTIFIC PROGRAMS FOR TRAINING DOCTORS OF PHILOSOPHY

During the period of postgraduate study, the graduate student masters the components of the educational and scientific program (ESP), namely acquires theoretical knowledge, skills, abilities and other competencies sufficient to produce new ideas, solve complex problems in the field of professional and / or research and innovation. , masters the methodology of scientific and pedagogical activities, as well as conducts its own research, the results of which have scientific novelty, theoretical and / or practical significance and defends the dissertation.

## GENERAL DISCIPLINES OF GRADUATE STUDENT TRAINING

- «Foreign language as a language of scientific communication» to improve speech skills in speaking, reading, writing;
- «Research Methodology» for the ability to perform original research, achieve scientific results that create new knowledge and can be published in leading scientific journals;
- «Modern methods of data analysis» to understand the basic methods of data analysis and the ability to apply tools and models of data analysis in research;
- «Psychological and pedagogical foundations of scientific and pedagogical activities» to understand modern ideas about the psychological and pedagogical features of scientific and pedagogical activities;
- «Psychological and pedagogical foundations of scientific and pedagogical activities» to understand modern ideas about the psychological and pedagogical features of scientific and pedagogical activities;
- «Philosophy and methodology of modern science, problems of formation of critical thinking» for the formation of a systematic scientific worldview;
- «Features of modern scientific communication» for the acquisition of universal language skills of the researcher.

## CONTACTS

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## DEPARTMENT OF POSTGRADUATE AND DOCTORAL STUDIES

The Department of Postgraduate and Doctoral Studies trains applicants for higher education at the third (educational-scientific) and scientific levels of higher education in order to obtain the degree of Doctor of Philosophy and Doctor of Science, respectively.

Training is conducted at **26 departments** in **14 scientific specialties**.

Every year, more than **200 graduate students** from Ukraine, up to 30 graduate students from other countries (USA, Finland, China, Iraq, Iran, India, etc.), and about 15 doctoral students study at the university's graduate school.

Postgraduate training is supervised by 73 doctors of sciences, professors; 20 candidates of sciences, professors; 57 candidates of sciences, associate professors. At present, the university has 7 specialized scientific councils for the defense of dissertations, including 6 - doctoral, 1 - PhD.

Every year, 30 to 50 dissertations for the degree of Doctor of Philosophy and up to 10 dissertations for the degree of Doctor of Science are defended in the specialized scientific councils of the university. More than 50% of graduate students annually join the ranks of scientific and scientific-pedagogical staff of the university.

## TRAINING PERIOD

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**The term of postgraduate study** in accordance with the current legislation of Ukraine for the degree of Doctor of Philosophy (PhD) - 4 years, for the degree of Doctor of Science - 2 years.



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Specialty

051

ESP

«ECONOMICS»

## MAIN DIRECTIONS OF RESEARCH

Research of social and economic systems, innovation and investment development, financial and economic security, modeling of socio-economic processes, information economy

## EDUCATIONAL DISCIPLINES

- Innovative paradigm of economic development;
- Security-oriented management of socio-economic systems;
- Applied analysis of economic data;
- Modeling of system characteristics in economics;
- Management of development of competitive potential of the enterprise.

## COST OF EDUCATION (2021)

22 500 UAH



**Specialty**

**105**

ESP

**«APPLIED PHYSICS  
AND NANOMATERIALS»**

## **MAIN DIRECTIONS OF RESEARCH**

Applied physics, condensed matter physics, highly dispersed materials, nanotechnologies, nanomaterials

## **EDUCATIONAL DISCIPLINES**

Nanotechnology in optoelectronics;  
Computer methods of nanophotonics.

## **COST OF EDUCATION (2021)**

22 500 UAH



**Specialty**

**113**

ESP

**«APPLIED  
MATHEMATICS»**

## **MAIN DIRECTIONS OF RESEARCH**

Mathematical modeling, numerical methods, data analysis

## **EDUCATIONAL DISCIPLINES**

- Mathematical modeling of processes and systems;
- Mathematical modeling of physical and mechanical fields;
- Numerical methods for solving problems of mathematical physics.

## **COST OF EDUCATION (2021)**

**22 500 UAH**

**Specialty****121**

ESP

**«SOFTWARE  
ENGINEERING»**

## MAIN DIRECTIONS OF RESEARCH

Modern methods of data analysis and forecasting (Data Science, Data Mining, Predictive Analytics, High Performance Computing, Big Data, Data Storages), image processing (Computer Vision, Pattern Recognition), language information processing (Language Processing, Natural Language Processing), information technologies (Information Technology), computer engineering software (Software Engineering)

## EDUCATIONAL DISCIPLINES

- Modern information technologies;
- Modeling and optimization of evolutionary systems;
- High-level technologies of language information processing in intelligent systems

## COST OF EDUCATION (2021)

**28 500 UAH**



## MAIN DIRECTIONS OF RESEARCH

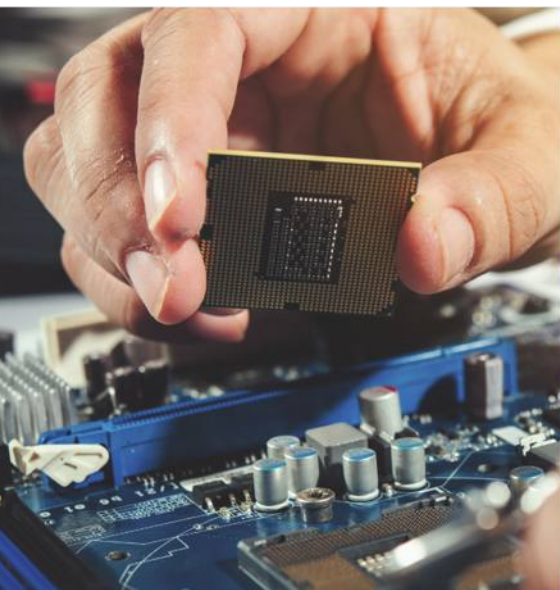
Computer science, models, methods of information systems development, methods and means of artificial intelligence, methods of search and optimization in information systems

## EDUCATIONAL DISCIPLINES

- Modern information technologies;
- Modeling of objects and management processes;
- Decision making and optimization in information systems and technologies;
- Neuro-phase systems and evolutionary learning;
- Methods of pattern recognition.

## COST OF EDUCATION (2021)

28 500 UAH



**Specialty**

**123**

ESP

**«COMPUTER  
ENGINEERING»**

## **MAIN DIRECTIONS OF RESEARCH**

Computer engineering, computer systems and networks, diagnostics of computer systems and networks, cyberspace, cloud services, hardware description languages, quantum computing, embedded systems on a crystal, neural networks

## **EDUCATIONAL DISCIPLINES**

- Modern information technologies;
- Progressive methods of design and production of microsystems;
- Distributed and embedded computer systems.

## **COST OF EDUCATION (2021)**

**22 500 UAH**



**Specialty**

**124**

ESP  
**«SYSTEM  
ANALYSIS»**

## **MAIN DIRECTIONS OF RESEARCH**

Systems analysis, optimal control, decision theory, data and knowledge analysis

## **EDUCATIONAL DISCIPLINES**

- Modern information technologies;
- Optimal management of complex systems;
- System analysis of problems of science and technology.

## **COST OF EDUCATION (2021)**

**22 500 UAH**





**Specialty**

**125**

ESP

**«CYBERSECURITY»**

## **MAIN DIRECTIONS OF RESEARCH**

Theoretical, methodological and organizational bases of creation of complex systems of information protection, cryptographic protection of information, methods of construction of cipher systems and cryptographic protocols, methodology of cryptographic analysis, technical protection of information, models and methods of network security, information security management

## **EDUCATIONAL DISCIPLINES**

- Mathematical methods of building modern cryptosystems;
- Methods of constructing postquantum cryptosystems;
- Methods of constructing postquantum cryptosystems;
- Modern methods of information protection at the physical level of information and communication systems;
- The latest technologies for cybersecurity in infocommunications;

## **COST OF EDUCATION (2021)**

**22 500 UAH**



Specialty

126

ESP

«INFORMATION  
SYSTEMS AND  
TECHNOLOGIES»

## MAIN DIRECTIONS OF RESEARCH

Information systems; Information Technology; efficiency, reliability, fault tolerance, survivability of information systems

## EDUCATIONAL DISCIPLINES

- Efficiency of application of modern information systems and technologies;
- Models and methods of research of information systems and technologies;
- Cloud technologies in information systems.

## COST OF EDUCATION (2021)

22 500 UAH



**Specialty**

**151**

ESP

**«AUTOMATION  
AND COMPUTER  
INTEGRATED TECHNOLOGIES»**

## **MAIN DIRECTIONS OF RESEARCH**

Automation of intellectual production, automation of design, automatic control of technological processes, flexible integrated robotic systems

## **EDUCATIONAL DISCIPLINES**

- Modern methods of process control;
- Modern components and automated technologies of microsystem technology;
- Models and methods of decision making in control and automation systems.

## **COST OF EDUCATION (2021)**

**22 500 UAH**



**Specialty**

**152**

**ESP**

**«METROLOGY AND  
INFORMATIONAL  
MEASURING EQUIPMENT»**

## **MAIN DIRECTIONS OF RESEARCH**

Metrology, information-measuring equipment, and measurement uncertainty, unity of measurements, metrological support

## **EDUCATIONAL DISCIPLINES**

Scientific bases of creation of modern information-measuring systems and complexes;

Modern optical frequency standards;

Computer methods of nanophotonics;

Normative bases of providing technical regulation.

## **COST OF EDUCATION (2021)**

**22 500 UAH**



**Specialty**

**163**

ESP  
**«BIOMEDICAL  
ENGINEERING»**

## **MAIN DIRECTIONS OF RESEARCH**

Biomedical engineering, mathematical modeling of biomedical processes and systems, methods of analysis of biomedical data, system design of biomedical complexes, engineering of medical knowledge, modern diagnostics, therapy and rehabilitation, intellectual technologies.

## **EDUCATIONAL DISCIPLINES**

- Intelligent technologies of modern diagnostics, therapy and rehabilitation;
- Modern information technologies;
- Promising directions and intellectual means of modern therapy;
- Mathematical modeling of processes and systems;
- Medical knowledge engineering.

## **COST OF EDUCATION (2021)**

**22 500 UAH**



**Specialty**

**171**

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ESP  
**«ELECTRONICS»**

## **MAIN DIRECTIONS OF RESEARCH**

Electronics, telecommunications, electronic devices

## **EDUCATIONAL DISCIPLINES**

- Diagnosis of materials and structures in electronics;
- Computer modeling of electronic systems and processes;
- Optoelectronic technologies;
- Nanoelectronic materials and devices.

## **COST OF EDUCATION (2021)**

22 500 UAH



**Specialty**

**172**

**ESP**

**«TELECOMMUNICATIONS  
AND RADIO ENGINEERING»**

## **MAIN DIRECTIONS OF RESEARCH**

Telecommunication systems and networks, radio systems and devices, network theory, communication systems

## **EDUCATIONAL DISCIPLINES**

- Methods of research, design and optimization of electronic systems;
- Mathematical methods of data analysis and multimedia information processing;
- Radio devices and means of information and communication systems;
- Methods of designing and managing traffic in software-configured networks;
- Computer aided design and modeling of telecommunications and radio engineering;
- Methods of increasing noise immunity of airspace surveillance systems.

## **COST OF EDUCATION (2021)**

**22 500 UAH**

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