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**Federal State Autonomous Educational Institution of Higher Education
PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA
NAMED AFTER PATRICE LUMUMBA
RUDN University**

ACADEMY OF ENGINEERING

(educational division (faculty/institute/academy) as higher education programme developer)

Approved at the meeting of Academic
Council of RUDN University
Protocol № 2022-08/24-11/1
29.11.2024
(date, month, year)

PROFESSIONAL EDUCATION PROGRAMME OF HIGHER EDUCATION

Field of Studies / Specialty:

2.4.5. Energy systems and complexes
(scientific speciality code and title)

Profile / Specialisation

Energy systems and complexes
(PhD program title)

The Educational Programme is developed in compliance with:

Educational Standard of RUDN University, approved by order of the Rector of RUDN University No. 139 dated March 9, 2022.

Length of Educational PhD Programme:

4 years

(full-time education)

Educational PhD Programme Features: programme is implemented in English

AGREED by:

Head of Educational
Programme
Radin Yu.A.

(signature)

Head of Educational Policy
Department
Vorobyeva A.A.

(signature)

Director of Engineering
Academy
Razoumny Yu.N.

(signature)

Head of PhD Study
Department
Borisova A.S.

(signature)

1. EDUCATIONAL PROGRAMME GOAL

The purpose of postgraduate studies is to guide the postgraduate student to the development of an academic career, maximum adaptation in the scientific environment. The goal is to solve the problems of building a nationally oriented economy and the formation of the necessary quality of "human capital".

The goal is to prepare and defend a dissertation for the degree of candidate of sciences.

2. BRIEF SUMMARY OF THE PROGRAM

The main professional educational program is implemented in full-time education in accordance with a license for the right to carry out educational activities. The term of education under the program is 4 years.

The volume of the program is 240 credit units (hereinafter referred to as CU). The volume of the postgraduate program implemented in one academic year is 60 CU .

3. LABOR MARKET NEEDS FOR PERSONAL TRAINING IN EDUCATIONAL PROGRAMME PROFILE

An analysis of the state and trends in the development of research and educational activities in the field of modern power engineering shows that the training of researchers and research teachers in this industry is one of the necessary conditions for increasing the potential and competitiveness of domestic educational institutions of higher education, research organizations and energy enterprises. mechanical engineering, carrying out scientific and educational activities within the framework of their activities.

Graduates who have mastered this program are oriented to work in Russian and international companies specializing in theoretical and experimental research, mathematical and computer modeling, design and design of materials, devices, devices, installations, equipment complexes for heat engineering purposes, as well as a combination of technical means, methods and methods of human activity for the production, distribution of thermal energy, management of its flows and the conversion of other types of energy into heat in production, operating organizations, research centers, higher educational institutions.

4. REQUIREMENTS FOR APPLICANTS APPLYING TO THE PHD PROGRAMME

For admission to the program, the Admission Rules are valid, approved by the relevant local regulatory act and posted in the public domain on the official website of RUDN University.

A potential applicant must be prepared for activities that require technical, research and pedagogical training.

A candidate for admission to graduate school must have a diploma of higher education (specialist, master's degree) in a chosen or related specialty, and also have training in organizing research work, methods of conducting and processing

experimental results, know the physical and mathematical foundations of the specialty; take a systematic approach to processes and phenomena. It is also desirable to have published works in the chosen specialty.

Entrance examinations are held in the form of an exam, upon satisfactory passing of which the applicant is enrolled in graduate school on a paid or budgetary basis.

5. STRUCTURE AND WORKLOAD OF THE EDUCATIONAL PROGRAMME FOR PhD STUDIES

The structure and volume of the postgraduate program - the period of development is 4 years in full-time.

No.	Structure of the Postgraduate Program	of the PhD program in z.e.
1. Scientific component		210
1.1.	Scientific activity aimed at preparing a dissertation for defense	178
1.2.	Preparation of publications and (or) applications for patents for inventions, utility models, industrial designs, selection achievements, certificates of state registration of programs for electronic computers, databases, topologies of integrated circuits, provided for in paragraph four of clause 5 of federal state requirements	24
1.3.	Intermediate certification by stages of scientific research	8
2. Educational component		24
2.1.	Disciplines (modules)	13
2.2.	Practices, including teaching practice	5
2.3.	Intermediate certification in disciplines (modules) and practice, including -pedagogical	6
3. Final certification		6
Scope of the Postgraduate Program		240

6. CHARACTERISTICS OF EDUCATIONAL PROGRAMME GRADUATE'S PROFESSIONAL ACTIVITIES

The field of professional activity of graduates who have mastered the training program for highly qualified personnel (postgraduate studies) includes:

theoretical and experimental research, mathematical and computer modeling, design and design of materials, devices, installations, equipment complexes for electrical and thermal purposes, as well as a set of technical means, methods and methods of human activity for the production, distribution of electrical and thermal energy, management its flows and the transformation of other types of energy into heat;

operation of modern industrial enterprises, transport systems, thermal, hydro- and nuclear power plants, factories, power lines.

The objects of professional activity of graduates who have mastered the educational program are:

- thermal and nuclear power plants, energy supply systems for enterprises, small-scale energy facilities, non-traditional energy sources;
- power units, combined-cycle and gas turbine installations;
- heat pumps;
- fuel cells, hydrogen energy installations;
- heat and mass transfer devices for various purposes;
- heat carriers and working fluids of power and heat engineering installations;
- standardization systems;
- systems and diagnostics of automated control of technological processes in heat and power industry.

The objects of professional activity of graduates who have mastered the postgraduate program are:

- research activities in the field of:
- development of programs for scientific research and technical development, preparation of assignments for research and scientific work;
- collection, processing, analysis and systematization of scientific and technical information on the topic of research, selection and justification of methods and means for solving the tasks;
- development of methods and organization of experiments and tests, analysis of their results;
- preparation of scientific and technical reports, reviews, publications based on the results of research;
- participation in conferences, symposia, schools, seminars, etc.;
- development of physical and mathematical models of the studied processes, phenomena and objects related to the professional field;
- protection of objects of intellectual property management of the results of research activities;
- teaching activity on educational programs of higher education.

Tasks of professional activity.

As a result of mastering postgraduate programs, the student should have formed:

- universal competencies that do not depend on a specific area of training;
- general professional competencies determined by the field of study or the field of study and the direction of the postgraduate program within the framework of the field of study (hereinafter referred to as the direction of the program);
- professional competencies determined by the direction of the program.

7. LOCATION OF IMPLEMENTATION OF THE PHD PROGRAMME

7.1. The postgraduate program is implemented by the Russian University of Peoples' Friendship.

7.2. Information about the planned bases for conducting practices and (or) performing scientific research

Practice and research*	Practice base <i>(name of organization, location)</i>
Pedagogical practice (stationary)	RUDN University, Moscow
Scientific research (stationary)	RUDN University, Moscow

* - the type of practice is indicated - its name (pedagogical, technological, etc.), method of conducting (stationary / visiting), or scientific research.

8. 8. FEAUTURES OF EDUCATIONAL PROGRAMME IMPLEMENTATION

8.1. The postgraduate program is implemented with elements of e-learning / digital / distance learning technologies.

8.2. The language of implementation of the PhD program is *English*

8.3. The program is not adapted for teaching the disabled and people with disabilities.