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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 the Academy of Engineering  
Protocol №. 2022-08/24-11/1  
date 11.29.2024

**PROFESSIONAL EDUCATION PROGRAMME OF HIGHER EDUCATION**

Field of Studies / Specialty:

**2.1.1 Building designs, buildings and constructions**

(scientific speciality code and title)

Profile / Specialisation

**Building designs, buildings and constructions**

(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

Markovich A.S.



(signature)

Head of Educational Policy

Department

Vorobyeva A. A.



(signature)

Head of Academy

Razoumny Yu. N.



(signature)

Head of PhD Study

Department

Borisova A. S.



(signature)

2025 r.

## **1. EDUCATIONAL PROGRAMME GOAL**

The goal of the PhD program is to prepare and defend a dissertation for the degree of Candidate of Sciences in the scientific specialty 2.1.1 Building designs, buildings and constructions.

## **2. BRIEF SUMMARY OF THE PROGRAMME**

Level of higher education - postgraduate studies - training of highly qualified personnel.

The term for obtaining education under the postgraduate program in full-time education, including vacations provided after passing the state final certification, is 4 years.

The volume of the postgraduate program is 240 credits and includes all types of classroom, independent and research work of a postgraduate student, internship, as well as the time allotted for quality control of mastering the educational program by a postgraduate student.

The types of professional activity of the graduate are research activities in the field of construction engineering and technology and teaching activities in educational programs of higher education.

The place of implementation of the program is the Engineering Academy of the Peoples' Friendship University of Russia (Russia, Moscow).

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

Postgraduate studies allow to prepare scientific and teaching staff in the direction of training of the scientific specialty "Building designs, buildings and constructions", responding to dynamically changing requirements and conditions in the modern labor market, in the main areas of professional activity in the field of construction, who own modern methods for evaluating technical and regulatory documents, systematized ideas, knowledge, skills in the field of practical activity, as well as the necessary skills and abilities of research work.

The program for the training of scientific and scientific-pedagogical personnel in postgraduate studies in the scientific specialty "Building designs, buildings and constructions" enables the graduate to solve the following professional tasks:

1. Research, development and justification of new types of load-bearing and enclosing structures of buildings and structures.
2. Development of new, improvement and optimization of space-planning and design solutions for buildings and structures, taking into account the processes occurring in them, natural and climatic conditions, mechanical, fire and environmental safety, including on the basis of mathematical modeling using automated design and research tools .
3. Development and justification of rational forms, space-planning solutions for buildings and structures based on the conditions of placement in the building, functional and technological processes, thermophysical, lighting, acoustic and other sanitary and hygienic conditions, fire and environmental safety.
4. Creation and development of various methods of calculation and experimental studies of structural systems, load-bearing and enclosing structures, structural properties of materials.
5. Development of the theory and methods for assessing the stress state, survivability, risk, reliability, residual life and service life of building structures, buildings and structures, including in emergency situations, special and beyond design impacts, substantiation of criteria for an acceptable level of safety.
6. Development and development of methods for monitoring, assessing the quality and diagnosing the technical condition of building structures of buildings and structures during their construction, operation and reconstruction.
7. Substantiation of technical solutions for the reconstruction, strengthening and restoration of elements and structures of operated buildings and structures.
8. Scientific justification for predicting loads and impacts on building structures, buildings and structures at the stages of their creation, operation and reconstruction.

9. Development and development of theoretical foundations and methods for calculating the enclosing structures of buildings and structures, taking into account natural and climatic, thermophysical, lighting, acoustic and other conditions.

#### **4. REQUIREMENTS FOR APPLICANTS APPLYING TO THE PHD PROGRAMME**

People with at least a higher education (specialist or master's degree) are allowed to master the programs for the training of scientific and pedagogical personnel in graduate school.

Applicants take entrance examinations on:

- a special discipline corresponding to the direction of training of scientific and pedagogical personnel in the postgraduate study of the subgroup "Construction", the group of scientific specialties "Construction and architecture", the scientific specialty "Building designs, buildings and constructions".

Entrance examinations are conducted in writing (special discipline).

To master the postgraduate program in the direction of preparation of the subgroup "Construction", the group of scientific specialties "Construction and architecture", the scientific specialty "Building designs, buildings and constructions", you must have the following knowledge, skills and abilities:

- knowledge of general theoretical categories and concepts of building science;
- knowledge of the basic terms and concepts in the scientific specialty "Building designs, buildings and constructions", as well as the main scientific works of scientists and methods for calculating building structures;
- ability to search and apply normative and technical documents; - the ability to write scientific articles;
- the ability to master educational and scientific literature, express their thoughts and participate in the discussion of the identified problems;
- writing skills;
- skills to perform research work;
- the ability to select, study, analyze, discuss monographic and other scientific research.

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

Duration of mastering the postgraduate program: 4 years.

Form of education: full-time.

One credit unit corresponds to 36 academic hours.

<b>No.</b>	<b>PhD programme structure</b>	<b>Workload, credit units</b>
1	Scientific Component	210
1.1	Research activity aimed at preparing for a thesis defense	178
1.2	Preparation of publications and (or) patent applications provided for in paragraph 5 of the Educational Standard of RUDN University	24
1.3	Intermediate certification at the stages of scientific research	8
2	Educational Component	24
2.1	Disciplines (modules)	13
2.2	Internship	5
2.3	Intermediate certification in disciplines (modules) and internship	6
3	Final attestation	6
PhD programme workload in credit units:		240

## 6. CHARACTERISTICS OF EDUCATIONAL PROGRAMME GRADUATE'S PROFESSIONAL ACTIVITIES

### *Area of professional activity.*

The field of professional activity of graduates who have mastered the postgraduate program includes:

- creation and improvement of rational types of structures, buildings, structures for various purposes and their complexes, as well as the development, improvement and verification of methods for their calculation justification;
- improvement of existing and development of new machines, equipment and technologies necessary for the construction and production of building materials, products and structures;
- improvement and development of new building materials;
- solving scientific problems, tasks in the relevant construction industry, which are of great socio-economic or economic importance;
- updating and improving the regulatory framework of the construction industry - in the field of designing construction projects;
- conducting educational and educational-methodical work in educational institutions of higher education.

### *Objects of professional activity.*

The objects of professional activity are:

- building designs, buildings and constructions and their complexes, including hydrotechnical, environmental structures and transport infrastructure facilities;
- loads and impacts on buildings and structures; building materials and products;
- machines, equipment, technological complexes, automation systems used in construction.

### *Types of professional activity.*

Types of professional activities for which graduates who have mastered the postgraduate program are preparing:

- research activities in the field of technical sciences and architecture;
- teaching activity on educational programs of higher education.

## 7. LOCATION OF IMPLEMENTATION OF THE PHD PROGRAMME

The PhD program is implemented by the Federal State Autonomous Educational Institution of Higher Education Peoples' Friendship University of Russia named after Patrice Lumumba.

The information about partner organisations involved in the implementation of the PhD programme:

Internship and Scientific Research	Internship location
Pedagogical Training (stationary)	RUDN University, Moscow
Research activity aimed at preparing for a thesis defense (stationary)	RUDN University, Moscow; Third party organizations performing research and development, depending on the focus of the research

## 8. FEATURES OF EDUCATIONAL PROGRAMME IMPLEMENTATION

The PhD program is implemented with elements of DET (based on the TUIS platform).

The language of implementation of the PhD program is English.

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