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«Российский университет дружбы народов имени Патриса Лумумбы»

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**Инженерная академия**

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Наименование основного учебного подразделения (ОУП) – разработчика программы)

Утверждена на заседании  
ученого совета ОУП  
протокол от 29 ноября 2023 г.  
№ 2022-08/23-11/3

## ПРОГРАММА ПОДГОТОВКИ НАУЧНЫХ И НАУЧНО-ПЕДАГОГИЧЕСКИХ КАДРОВ В АСПИРАНТУРЕ

Научная специальность:

**2.1.1. Строительные конструкции, здания и сооружения**

(код и наименование научной специальности)

Направленность (профиль):

**Building Designs, Buildings and Constructions: The Theory of Buildings and Structures /  
Строительные конструкции, здания и сооружения (англ.)**

(наименование программы подготовки научных и научно-педагогических кадров)

Программа подготовки научных и научно-педагогических кадров в аспирантуре  
разработана в соответствии с требованиями:

**СУТ РУДН**, утвержденных приказом ректора от 09 марта 2022 г. № 139

Срок освоения программы подготовки научных и научно-педагогических кадров в  
аспирантуре:

**4 года**

(очная форма обучения)

Сведения об особенностях реализации программы: реализуется на английском языке.

СОГЛАСОВАНО:

Руководитель программы  
Свинцов А. П.

(подпись)

Начальник УОП  
Воробьева А. А.

(подпись)

Директор академии  
Разумный Ю. Н.

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Начальник ДАД  
Борисова А. С.

(подпись)

2024 г.

## **1. PURPOSE OF THE POSTGRADUATE PROGRAM**

The purpose of the postgraduate study in the scientific specialty "Building designs, buildings and constructions" is to guide the postgraduate student to the development of an academic career, maximum adaptation in the scientific environment.

The main goal of the postgraduate program is to train qualified personnel in the field of building designs, buildings and constructions that solve research, scientific, pedagogical, practical professional tasks, as well as the development of personal qualities that allow the implementation of the acquired knowledge in professional activities.

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

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. THE NEED OF THE LABOR MARKET FOR GRADUATES WHO HAVE COMPLETED THE POSTGRADUATE PROGRAM**

Postgraduate studies with the qualification "Researcher" and "Teacher-Researcher" allows to prepare scientific and pedagogical workers on the direction 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.

According to postgraduate programs, one of the main conditions of study, in addition to obtaining education, is the preparation of a dissertation for the degree of candidate of science (PhD degree). Graduates of the RUDN University postgraduate course - holders of the PhD degree receive a PhD diploma.

#### **4. REQUIREMENTS FOR APPLICANTS APPLYING TO THE PROGRAM**

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 SCOPE OF THE PROGRAM FOR TRAINING SCIENTIFIC AND SCIENTIFIC-PEDAGOGICAL PERSONNEL IN POSTGRADUATE STUDIES**

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

<b>№</b>	<b>Structure of the Postgraduate Program</b>	<b>The scope of the PhD program in credits</b>
1. Scientific component		<b>210</b>
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 at the stage of scientific research: Scientific activity aimed at preparing a dissertation for defense	8
2. Educational component		<b>24</b>
2.1.	Disciplines (modules)	<b>13</b>

2.2.	Practices, including teaching practice	<b>5</b>
2.3.	Intermediate certification in disciplines (modules) and practices	<b>6</b>
3. Final examination		<b>6</b>
Scope of the Postgraduate Program		<b>240</b>

## **6. CHARACTERISTICS OF THE PROFESSIONAL ACTIVITY OF A GRADUATE**

### *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. PLACE OF IMPLEMENTATION OF THE POSTGRADUATE PROGRAM**

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

<b>Practice and research*</b>	<b>Practice base</b> <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. FEATURES OF THE IMPLEMENTATION OF THE POSTGRADUATE PROGRAM**

8.1. The PhD program is implemented without the use of e-learning / digital / distance learning technologies.

8.2. The language of the PhD program is Russian/English.

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