Федеральное государственное автономное образовательное учреждение высшего образования
«Российский университет дружбы народов имени Патриса Лумумбы»

Инженерная академия
(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:

2.1.9. Строительная механика
(код и наименование научной специальности)

Направленность (профиль):

Structural Mechanics / Строительная механика (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:

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2024 г.

1. PURPOSE OF THE POSTGRADUATE PROGRAM

The purpose of the postgraduate study in the scientific specialty "Structural Mechanics" 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 structural mechanics 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 "Structural Mechanics", 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 "Structural Mechanics " enables the graduate to solve the following professional tasks:

1. General principles for calculating buildings, structures and their elements at all stages of the life cycle.

2. Linear and non-linear mechanics of structures, buildings and structures, development of physical and mathematical models for their calculation.

3. Analytical methods for calculating buildings, structures and their elements for strength, rigidity, stability, under static, dynamic, temperature loads and other influences.

4. Numerical and numerical-analytical methods for calculating buildings, structures and their elements for strength, rigidity, stability under static, dynamic, temperature loads and other influences.

5. Theory and methods of optimizing the structures of buildings and structures.

6. Theory and methods for calculating the reliability of buildings, structures and their elements (reliability, durability, maintainability, storability).

7. Theory and methods for calculating buildings and structures in extreme situations (earthquakes, hurricanes, explosions, fires, accidents, and so on).

8. Theory and methods of ensuring the survivability of buildings, structures and their protection from progressive collapse.

9. Theory and methods for assessing the bearing capacity of buildings, structures and their elements.

10. Theory and methods for improving the safety of structures of buildings and structures (operated, reconstructed, restored, repaired, etc.).

11. Experimental methods for studying buildings, structures and their elements.

12. Research and modeling of loads and impacts on buildings and structures.

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 "Structural Mechanics".

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 "Structural Mechanics", 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.

№	Structure of the Postgraduate Program	The scope of the PhD program in credits
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 at the stage of scientific research: Scientific activity aimed at preparing a dissertation for defense	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 practices	**6**

3. Final examination	**6**
Scope of the Postgraduate Program	**240**

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

Practice and research*	**Practice base** *(name of organization, location)*
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 / ОСОБЕННОСТИ РЕАЛИЗАЦИИ ПРОГРАММЫ АСПИРАНТУРЫ

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.