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 02 марта 2026 г.
№ 2022-08/07

ПРОГРАММА ПОДГОТОВКИ НАУЧНЫХ И НАУЧНО-ПЕДАГОГИЧЕСКИХ КАДРОВ В АСПИРАНТУРЕ

Научная специальность:
2.1.5. Строительные материалы и изделия
(шифр и наименование научной специальности)

Направленность (профиль):
Construction Materials and Products / Строительные материалы и изделия (англ.)
(наименование программы подготовки научных и научно-педагогических кадров в аспирантуре)

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
Малькова М. Ю.
(подпись)

Руководитель ОУП
Разумный Ю. Н.
(подпись)

Начальник УОП
Воробьева А. А.
(подпись)

Начальник ДАД
Борисова А. С.
(подпись)

2026 г.

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 2.1.5 Construction materials and products.

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 subgroup "Construction materials and products", 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 "Construction materials and products" enables the graduate to solve the following professional tasks:

1. Mastery of modern problems of science and technology, forms and methods of scientific knowledge and development of science.

2. Study of new compositions, structures and technological principles for obtaining building materials according to predetermined properties using natural and man-made raw materials, instrumental methods of quality control.

3. Development of the ability and readiness to conduct scientific experiments, evaluate research results, and the ability to professionally operate modern research equipment and instruments.

4. Acquiring knowledge of basic physical and chemical laws and their use in the field of structure formation of modern theories of building materials science.

5. Acquiring skills in using mathematical tools to develop mathematical models of processes and phenomena for solving recipe and technological problems.

6. Acquisition of knowledge and skills in order to find conditions and rules for conducting experiments under which it is possible to obtain reliable and reliable information about the building material in a compact and convenient form with a quantitative assessment of accuracy.

7. Mastering the ability to formulate a physical and mathematical formulation of research problems, select and implement methods for optimizing scientific research, analyze and summarize the results, and bring them to practical implementation.

8. Mastering the methods of compiling relevant scientific and technical reports based on the results of experiments carried out as part of the overall plan for conducting dissertation research.

9. Development of theoretical foundations for the production of composite building materials on ceramic, concrete or polymer matrices with a given set of properties.

10. Development of methods for predicting and assessing the durability of building materials under given operating conditions.

11. Creation of theoretical foundations for the production of hydration-hardening building composites and composite binders and concrete.

12. Development of compositions and principles for the production of effective building materials using local raw materials and industrial waste.

13. Development of a system for monitoring and assessing the quality of building materials and products.

14. Development of methods for conducting a numerical experiment for the purpose of predictive assessment of the structure-dependent properties of building materials.

15. Development of methods for recycling and reusing materials from dismantling buildings and structures.

16. Creation of materials for special structures and structures, taking into account their specific requirements.

17. Development of theoretical foundations and technology for producing dry building mixtures for various purposes.

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 "Construction materials and products".

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 "Construction materials and products", 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 "Construction materials and products", 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.

No.	PhD programme structure	Workload, credit units
1	Scientific Component	209
2	Educational Component	25

No.	PhD programme structure	Workload, credit units
2.1	Disciplines (modules)	19
2.2	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. FEAUTURES 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.