Federal State Autonomous Educational Institution of Higher Education
«Peoples' Friendship university of Russia»

Agrarian and Technological Institute

Adopted by Academic Council
Of the Agrarian and Technological Institute
12.12.2020
protocol № 2021-01-08/06

Affirm
First Vice Rector –
Vice Rector for Education
A.V. Dolzhikova
_____ 20__ г.

Basic professional studying program of higher education

Direction of training (specialty)

06.06.01 BIOLOGICAL SCIENCES

Approved by the order of the Ministry of Education and Science of Russia Federation 12.09.2013 № 1061

The programme was designed appropriate to requirements of ES HE RUDN that was affirmed by rector's decree dated 26.02.2015 № 96

Graduate' s qualification: Researcher. Mentor-researcher

The direction of programme (profile, specialty):

Plant genetics

Form of studying - full-time

A period of programme mastering - 4 years

Information about features of the implementation of the basic studying programme:
Implemented in English

Agreed:
Director of the programme
E.V. Romanova
_____
_____20__ г.

Agreed:
Director of MSSN
T.A. Lobaeva
_____
_____20__ г.

Agreed:
Director of the Institute
E.A. Dovletyarova
_____
_____20__ г.

2021

Федеральное государственное автономное образовательное учреждение высшего образования
Российский университет дружбы народов

Аграрно-технологический институт

Принято Ученым советом
АТИ
от «12» декабря 2020 г.
протокол № 2021-01-08/06

Утверждаю
Первый проректор - проректор по образовательной деятельности
Должикова А.В.
_____ 20__г.

Основная профессиональная образовательная программа высшего образования

Направление подготовки

06.06.01 БИОЛОГИЧЕСКИЕ НАУКИ

в соответствии с перечнем, утвержденным приказом Минобрнауки России от 12.09.2013г. № 1061.

Программа разработана в соответствии с требованиями ОС ВО РУДН, утвержденным приказом ректора от 26.02.2015 г. № 96

Квалификация выпускника: Исследователь. Преподаватель-исследователь

Направленность программы (профиль, специализация):

Генетика растений

Форма обучения – очная

Срок освоения программы в очной форме – 4 года

Сведения об особенностях реализации основной образовательной программы:
реализуется на английском языке

Согласовано:
Руководитель программы
Романова Е.В.
_____
_____20__ г.

Согласовано:
Председатель МССН
Лобаева Т.А.
_____
_____20__ г.

Согласовано:
Руководитель ОУП
Довлетярова Э.А.
_____
_____20__ г.

2021 г.

Educational Program Description

Education program (EP) «Plant Genetics" (in English)

General characteristics of the EP

1.1. The EP' purpose (mission).

The main mission of the Program (Plant genetics - 06.06.01 - "Biological sciences") is to form high-quality specialists (PhD), to develop personalities with required qualities to work in the higher educational establishments, research organizations and other structures; able to conduct research works and teach, while also forming in them universal, general and professional competences in conformity with the requirements of ES HE RUDN in this training area.

1.2. Basic information.

The EP "Plant genetics" (06.06.01 - Biological sciences) is a post-graduate program of highly qualified personnel training, which corresponds to the third level of higher education. This post-graduate program is a full-time program. The particularities of the EP realization include other aspects such as modular principle, e-learning elements and distance learning technologies. For persons with disabilities, e-learning and distance learning technologies facilitates the reception and transmission of information and educational materials.

The EP "Plant genetics" provides training of highly qualified personnel (post-graduate) in biological sciences – 06.06.01, in the following profile: "Genetic" – 03.02.07

Area of expertise for graduates who achieve mastery of the EP "Plant genetics" includes research and solving complex problems in the field of plant genetics: gene expressions, plant heredity, genetic basis of plant immunity, genetic regulations, genetic engineering, genomic, transcriptomic, epigenetic regulations, cytogenetics, population genetics.

Subjects of postgraduate professional activities – Subjects of research in this program are cultivated plants (species, varieties and hybrids, genetic collections of plants), clones of plants, individual cells, viruses, bacteria, fungi, DNA molecules, proteins, enzymes, biological active substances, drugs and biological drugs, production process of drugs, food and feedstuff

Careers for graduates of the postgraduate program "Plant genetics":

- research activities in the field of plant genetics, plant breeding and genetics of crops, in different collective research projects;
- teaching activities in educational programs of higher education

The postgraduate program aims for graduates to grasp all types of professional activity, related to the program.

Information about the features of the EP "Plant genetics" implementation:

- use a form of educational activities' organization, based on a modular principle of EP content' presentation and the curriculum' development;
- during the EP realization, various educational technologies, including e-learning, distance learning technologies are envisaged to be used.

The objet field for post-graduate training in "Plant genetics" (06.06.01 "Biological sciences") are:

A) in the scientific research sector of biological sciences (plant genetics):

- Fundamental research in theory and practical applications;
- Research into the history of biological sciences'(genetics) development and research methodologies used in plant genetics;
- Research in plant genetics;

- Design and development of advanced technologies and methods used in plant genetics;
- Applied research based on fundamental methods of genetics;
- Study on the problems of biological sciences' formation to disclosure the stable relations and laws governing the nature and content of these problems, the logic and mechanisms to resolve them;
- Identification, analysis and resolution of problems of innovative development in modern plant genetics, the control of the innovation processes' main parameters, as well as methods and tools of innovation results' evaluation;
- Development of theoretical and methodological principles, methods and techniques used in the plant genetics;
- Analysis of current trends and forecasts of plant genetics' development;
- Improvement of the methods used in plant breeding and genetics;
- Theoretical and experimental research in plant genetics.

B) in the teaching profession sector for educational programs of higher education:

- development of training courses of professional activities, such as these based-on results of theoretical and empirical studies, including preparation of teaching materials, teaching aids and textbooks;
- teaching biological subjects, and teaching and guiding on areas of professional activity;
- Conducting research in an educational organization, including management of students' research work.

The place of realization of the EP "Plant genetics" (06.06.01 - Biological sciences):
Peoples' Friendship University of Russia, Agricultural and Technological Institute (Moscow, Mikloukho-Maklaya Street, 8/2.).

1.3. Features of EP' realization.

Features of EP "Plant genetics" (06.06.01 - Biological sciences) realization are:

- Application of form in educational activities' organization, based on a modular principle of EP content' presentation and the curriculum' development;
- Usage of a variety of educational technologies, including e-learning, distance learning technologies;
- The use of modular form of educational activities organization based on a modular principle. The feature of the construction of curricula based on the modular principle is that it is composed of relatively independent parts, forming a specific competence or group of competences in the program: academic discipline; or combination of disciplines, combined by interdisciplinary connections.

The content of the EP "Plant genetics" (06.06.01 - Biological sciences) includes a mandatory part (basic) and a part of related courses to the program (variability part). The curriculum is organized in the following blocks:

Block 1 "Disciplines (modules)", which includes disciplines (modules) of the basic part and disciplines (modules) of the variability part. The basic part of Block 1 includes disciplines required for post-graduate students of all profiles. The variability part includes professional disciplines and optional disciplines, where postgraduate choose 3 from proposed disciplines of the program: "Plant Genetics".

Block 2 "Practice", which includes pedagogical practice, needed to form in postgraduates teaching and instructional skills.

Block 3 "Research", which implies consolidation and deepening of the theoretical training, and acquisition of research skills necessary to prepare articles, theses and abstracts, as well as the development of competencies in the field of professional activities in accordance with the requirements of the ES HE RUDN in this training area.

Block 4 "State final examination" includes: preparing and passing the state examination for the profile of training; and presenting a scientific report on the thesis. “State final examination is completed by the qualification specified in the list of specialties and areas of training of higher education approved by the Ministry of Education and Science of the Russian Federation”.

1.4. Labor market demands for graduates of the EP.

Analysis of the status and trends of research and educational activities shows that knowledge base’ formation and management for researchers and teachers is an important factor in increasing their capacity and competitiveness in domestic educational institutions of higher education, research organizations and innovation-active companies, performing scientific and educational activities.

Modern educational, research and other innovation-active organizations are in dire need of professional biological researchers and geneticists, teachers and researchers capable of performing scientific and pedagogical activity.

As analyzed by the director of the EP, postgraduates of the program respond to the requirements of the labor market, so they can successfully work in different organizations, such as state administrative structure, Agro-industrial complexes, farm businesses, Universities, Representative offices of foreign firms, Assessment services of agricultural raw materials, Research and production associations, Research institutes, Quarantine service, Breeding centers, Greenhouse plants.

1.5. Eligibility Requirements.

The applicants for EP “Plant genetics” (06.06.01 - Biological sciences) must be prepared for activities that require in-depth biological (genetic) knowledge, researching and teaching skills and possess the following competencies:

- general cultural competence: the ability to think abstractly, analyze, synthesize; willingness to act in unusual situations, bear the social and ethical responsibility for their decisions; willingness to self-development, self-realization, use of creative potential;
- general professional competence: capability to communicate orally and in writing in English to meet the challenges of professional activity; willingness to manage a team in their professional activities, acceptance of social, ethnic, religious and cultural differences; ability to make organizational and administrative decisions;
- professional competences

- *in the scientific research sector* : the ability to synthesize and critically evaluate the results obtained by domestic and foreign researchers, to identify promising areas, draw up a program of studies; the ability to justify the relevance of the theoretical and practical significance of the chosen research topic; the ability to conduct independent research in accordance with our program; the ability to present the results of research to the scientific community in the form of an article or report;

- *in the educational sector*: the ability to apply modern methods and techniques of teaching biological subjects in professional educational organizations, educational institutions of higher education, additional vocational training; the ability to develop training plans, programs, and appropriate methodological support for teaching in professional educational organizations, educational institutions of higher education, additional vocational training.

1.6. Characteristics of EP postgraduates’ professional activity:

1.6.1. The area of professional activity.

The Field of postgraduate’ professional activity who successfully complete this program includes plant genetics, genomics, transcriptomics, proteomics, epigenetics, molecular biology.

Specifics of postgraduate' professional activity are the implementation of research activities in the field of plant genetics and teaching in educational programs of higher education.

In view of the biological sector of research, a postgraduate can carry out professional activities in higher education, research and other innovation-active organizations and institutions of education and research infrastructure of the Russian Federation and foreign countries.

1.6.2. Subjects of postgraduate professional activities (PhD program - 06.06.01 "Biological sciences):

Subjects of research in this program are cultivated plants (species, varieties and hybrids, genetic collections of plants), clones of plants, individual cells, viruses, bacteria, fungi, DNA molecules, proteins, enzymes, biological active substances, drugs and biological drugs, production process of drugs, food and feedstuff

1.6.3. Types of professional activity.

Professional activities for postgraduates who have completed the EP are defined in accordance with the ES HE RUDN in conjunction with the stakeholders of the educational process based on labor market needs, research and logistical resources of RUDN University:

- *research activities in biological sciences:*

03.02.07 - "Genetics"

- *teaching activity in educational programs both in agricultural and biological faculties*

1.6.4. Focal points of professional activity.

Professional activities' focal points in this program are defined in accordance with the ES HE RUDN for research and teaching in "Biological sciences" and the specialization (profile) of training in accordance with the ES HE RUDN requirements.

Tasks and assignments are foreseen by ES HE RUDN in consideration of educational organization' traditions and the needs of employers during the development of scientific specialties profiles' training program.

1.7. Requirement to the results of mastering EP "Plant genetics" (06.06.01 - Biological sciences)

The results of mastering the program for the preparation of scientific and pedagogical specialists in Postgraduate course are determined by the competencies acquired by the graduate student: his ability to apply the acquired knowledge, skills and skills in his professional activities.

After mastering the EP, the postgraduate must have developed:

- universal competences, formed because of the development of postgraduate studies in all areas of training programs;
- general professional competences, defined training direction or the direction of training and post-graduate programs oriented within the field of study (hereinafter - the focus of the program);
- professional competences, defined program orientation.

Universal competences:

- ability for critical analysis and evaluation of current scientific achievements, generating new ideas in solving the research and practical tasks, including in interdisciplinary fields (UC-1);

- the ability to plan and carry out comprehensive studies, including interdisciplinary, a holistic system of scientific outlook using knowledge in the field of History and the Philosophy of science (UC-2);
- readiness to participate in the work of Russian and international research teams to address scientific and educational tasks (UC-3);
- readiness to use modern methods and technologies of scientific communication in the state and foreign languages, including readiness for communication in oral and written forms in Russian and foreign languages for the solution of problems of professional activity, possession of foreign language communicative competence in official and business, educational and professional, scientific, sociocultural, daily and household spheres of foreign language communication (UC-4);
- the ability to make independent decisions motivated in unusual situations and a willingness to take responsibility for their consequences (UC-5).

General professional competences:

- Ability to carry out scientific research activities in the relevant professional field using modern research methods and information and communication technologies (GPC-1);
- Readiness for teaching on the basic educational programs of higher education (GPC-2).

Professional competences:

- The ability to analyze modern problems in Biology and to use fundamental biological concepts in the sphere of professional activity for setting and solving new problems (PC-1);
- The ability to use basic theories, concepts and principles in the chosen field of activity, mastery of efficient ways of thinking (PC-2);
- The ability to independent analysis of available information, identification of fundamental problems, setting goals and objectives of the research, performing laboratory biological research in solving specific tasks by specialization with the use of modern equipment and computer facilities, demonstrating responsibility for the quality of work and scientific reliability of the results (PC-3);
- Knowledge of history and methodology of Biological sciences, which expand the general professional, fundamental training (PC-4);
- Knowledge of the fundamentals doctrine of the biosphere, understanding of modern biosphere processes, the ability to systematically assess them, the ability to predict the consequences of implementing socially significant project (PC-5);
- The ability to creatively apply modern computer technologies in the collection, storage, processing, analysis and transferring of biological information (PC-6);
- The ability to understand and deeply comprehend the philosophical concepts of natural science, the place of the natural sciences in developing a scientific worldview (PC-7);
- Use the skills to organize and manage the work in professional collectives, ability to interdisciplinary communication and to free business communication in Russian and foreign languages, work in international collectives (PC-8);
- The ability to professionally design, submit and report the results of scientific research and industrial-technological work on approved forms (PC-9);

1.8. Matrix of Competences

Disciplines (modules)		Universal competencies					General professional competencies		Professional competencies								
		The ability to analyze and evaluate current scientific achievements, generate new ideas and solve the research and practical problems (UC-1)	The ability to design and perform integrated research, including interdisciplinary research (UC-2)	The readiness to participate in the work of Russian and international research teams (UC-3)	the readiness to use modern methods and technologies of scientific communication in the state and foreign languages (UC-4)	The ability to plan and tackle tasks of their own professional and personal development (UC-5)	The ability to carry out research in the professional field with the use of modern methods of research and information technologies (GPC-1)	The readiness to teach basic educational programs of higher education (GPC- 2)	The ability to understand modern problems of biology and use fundamental biological ideas in professional activities for the goal setting and solution of new problems (PC-1)	The ability to use the basic theories, concepts and principles in the chosen field of activity, the ability to systems thinking (PC-2)	the independent analysis of available information, the identification of the fundamental problems, the goal setting, the carrying out of the laboratory of biological research with the use of modern equipment and computing resources, demonstration of responsibility for the quality and scientific validity of the results (PC-3)	Knowledge of the history and methodology of biological sciences (PC-4)	Knowledge of the biosphere theory, the understanding of modern biosphere processes, the ability to predict the consequences of the implementation of social projects (PC-5)	The ability to use modern computer technology in the collection, storage, processing, analysis and transmission of biological information (PC-6)	The ability to understand and comprehend the philosophical concepts of science, the place of the natural sciences in the development of a scientific worldview (PC-7)	The use of the skills of the professional team management, the capacity for interdisciplinary communication and the communication in Russian and foreign languages, the work in international teams (PC-8)	The ability to present and report the results of scientific research (PC-9)
Block 1	**Educational disciplines (modules)**																
	Basic component																
	Foreign language				X												
	History and philosophy of science	X	X														
	Variative component																

	Research methodology and experimental design	X	X	X													
	Pedagogics of higher education							X									
	Plant Genetics	X					X		X	X		X					
	Foreign language				X												
	Russian language as foreign				X				X	X	X						
	Genetic basis of plant immunity	X					X		X	X	X						
	Molecular and biochemical markers	X					X		X	X	X						
	Plant breeding and biotechnology	X					X		X	X	X						
Block 2	**Practice**																
	Scientific research practice						X				X	X		X	X	X	X
	Teaching practice							X	X	X	X	X		X	X	X	X
Block 3	**Scientific research**						X		X	X	X	X		X	X	X	X