

**Federal State Autonomous Educational Institution of Higher Education**

Peoples' Friendship University of Russia  
*Agrarian and Technological Institute*

**PROGRAM  
SCIENTIFIC RESEARCH**

**Recommended for the course**  
06.06.01 Biological Sciences

**Profile:**  
03.02.07 «Plant Genetics»  
(higher education – training of highly qualified personnel)

**Graduate qualification (Degree):**  
Researcher. Research teacher

Moscow  
2017

## **1. Objectives of research**

The purpose of the research work of a graduate student is the acquisition of practical skills of independent research work, collecting material for thesis writing and checking the validity of the theoretical conclusions made in the final qualifying work.

## **2. Tasks of research work**

The objectives of the research work are:

- mastering a graduate student in the methodology and scientific methods of research work,
- use of modern information technology in the field of security,
- acquisition of skills and abilities to receive, process, store and disseminate scientific legal information.
- collection and analysis of the necessary material.

## **3. Place of research work in the structure of EP**

In the system of research work, training of highly qualified personnel is a component of professional training for research activities in higher education and is a type of practical activity of postgraduate students in the implementation of scientific work in higher education, including scientific research in the framework of the theme of their graduate qualification work (dissertation), approbation of the results and writing a candidate dissertation.

Научно-исследовательская работа для обучающихся по основным образовательным программам (профилям) аспирантуры по направлению «Сельское хозяйство» является частью образовательной составляющей, предусмотренной учебными планами, и логическим завершением научно-исследовательской работы.

Research work for students on the main educational programs (profiles) of the postgraduate course in "Agriculture" is part of the educational component provided by the curriculum and the logical conclusion of the research work.

For successful research work, a graduate student must have preliminary training in professional courses, possess the initial skills of scientific research, be able to work independently with the main information sources, select literature on a given topic, prepare abstract reviews on the research topic, analyze the concepts and essences of ideal objects, own skills to use information technology and databases.

## **4. Forms of research**

Research work is the main core, which takes place during the whole preparatory course for graduate students.

По окончании научно-исследовательской работы в конце каждого года обучения аспирант защищает отчет о проделанной работе.

The scientific practical takes place during the whole preparatory course for graduate students.

At the end of the research work for every end of academic year, the graduate student presents and defends a progress report.

During the research work the student's main task is to complete the research on the topic of final qualifying work (PhD thesis). To do this, the graduate student must conscientiously carry out the instructions of the immediate supervisor. A graduate student publishes scientific articles on the topic of scientific research in journals included in the list of HAC and RSCI, speaks at scientific conferences, seminars, round tables, prepares his dissertation.

## **5. Place and time of production work**

The research work of a graduate student is carried out in the university and libraries. The place of internship is determined by taking into account the topic of the final qualifying work (master's thesis) of the student. It is carried out on all years of study during all semesters.

### **6. Competences of the student, formed as a result of practical training**

As a result of this practical training, the student should acquire the following practical skills, abilities, universal and professional competencies:

<b><i>General Professional Competences</i></b>	
Ability to carry out scientific research activities in the relevant professional field using modern research methods and information and communication technologies (GPC-1);	GPC-1
<b><i>Professional competences:</i></b>	
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
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

As a result of the research work, the graduate student will receive:

a) knowledge:

1. Modern research methodology.
2. Modern technologies for searching and processing information.
3. Requirements for the quality, completeness and reliability of sources of information used in scientific research.
4. Key regulatory requirements for processing research results.
5. Rules and techniques for conducting scientific discussions.

b) skills:

1. Identify and formulate relevant problems in the area under study, set goals, determine the subject and objectives of scientific research.

2. To analyze the evolution of attitudes, approaches, concepts in the area under study.
3. To form a research program.
4. To search, collect and process information for scientific research.
5. Use modern research methods.
6. Conduct empirical research, including in the forms of questioning, interviewing, surveys.
7. To analyze official documents on the topic of scientific research.
8. To analyze specific applied problems of legal regulation and law enforcement in the framework of the topic of their scientific research at various levels of theoretical understanding.
9. Formulate the author's approach to solving the problems posed in the study.
10. To argue the results of independent scientific research and make sound conclusions.
11. To present the results of scientific research in the form of completed research and development: reports, abstracts, reports, scientific articles.

c) Attainments:

1. The use of modern computer technology information retrieval in the study area.
2. The use of modern corporate information systems.
3. Processing of empirical data, including statistical.
4. Development of a program of scientific experiment or other empirical research.
5. Applications of critical thinking techniques.
6. The selection, analysis, processing and systematization of data, professional work with electronic documents.
7. Public speaking.
8. Preparation of presentations and scientific reports, design of scientific articles and scientific work.

## 7. Structure and content of research work

The total complexity is 120 credits, 4320 hours.

№	Sections (stages) of work	Types of production work, in practice, including the independent work of graduate students and labor intensity (in hours)		Periodic Assessment
		Room	Indiv. work	
1.	Preparatory	20	10	Oral recitation
2.	Main	50	4000	Differentiated tests
3.	Final	40	200	Written report

### *Types of postgraduate research activities*

#### **Stage 1 (Preparatory):**

– an orientation lecture is held in which graduate students are introduced to the goals, objectives and content of research work. In addition, graduate students receive advice on the design documentation. An individual task to work with a supervisor.

#### **Stage 2 (Main):**

##### **First year:**

1. Selection and approval of the topic of scientific research.
2. The study of scientific literature and other information sources on the studied topic in order to determine the actual problem to which the study will be devoted.

3. Setting goals and objectives of the study, the definition of the object and subject of scientific research.
4. Analysis of the main approaches, concepts and their evolution on the research topic.
5. The choice of research methods and tools.
6. Development and presentation of an annotated plan of final qualifying work (PhD thesis).
7. Participation in scientific conferences, round tables, seminars.
8. Participation in the research work of the relevant department.

#### **Second year:**

1. Collect data on a research topic.
2. Preparation of the theoretical and methodological section of final qualifying work.
3. The nomination of scientific hypotheses.
4. Preparation of the version of the first and second chapters (sections) of the work.
5. Participation and performance in scientific conferences, round tables, seminars, with the obligatory publication of abstracts or articles in event materials.
6. Participation in the research work of the department.
7. The postgraduate publication of an article in journals included in the HAC list and in the RSCI list, as well as, if possible, publications in a foreign language in international journals included in the Web of Science and Scopus registries; in the amount approved by the HAC RF and the university.

#### **Third year:**

1. Conducting empirical research on the topic of research work, including processing, analysis and synthesis of the results.
2. Approbation of the results obtained and the personal contribution of the graduate student to the study of the chosen topic through participation in scientific conferences, the mandatory discussion of the results of the research conducted at the department.
3. Identification of the alleged contribution of a graduate student in the development of the topic under study.
4. Publication by a graduate student of an article in journals included in the VAK list and in the RSCI list, as well as, if possible, publications in a foreign language in international journals included in the Web of Science and Scopus registries, in an amount approved by the VAK RF and the university.
5. Preparation of a variant of the third chapter of qualifying work.

#### **Fourth year:**

1. The projects of all three chapters of the final qualifying work (PhD thesis) were prepared and discussed.
2. The graduate student is ready to proceed with the design of the final qualifying work and its pre-defense in the block "State final certification."

*The third (final) stage* provides for summing up the work for the school year. Graduate students summarize their research experience in reports and reports. Teachers analyze the activities of graduate students, note the difficulties they have encountered and the most successful solutions to the tasks set during the course of the classes. The overall assessment consists of the degree of participation of the graduate student in the scientific life of the department and the university, the level of research on the thesis and documentation.

### **8. Research and research and production technologies used in research work**

1. Multimedia technology

### **9. Research and production technologies used in research work**

The independent work of the graduate student is carried out in accordance with the individual plan developed by the graduate student and supervisor, approved in accordance with the schedule of the educational process by the relevant department.

Graduate students in their work use sources on the subject of their scientific research. At the same time, the graduate student is obliged to familiarize himself with the works on the topic of his research recommended by his supervisor, scientists working and working at the university, as well as other scientific and educational organizations representing the main law schools of the country. It is mandatory for a graduate student to familiarize himself with the work on the topic of his research published in international journals, available through international (including electronic) library systems that the University provides access to. A graduate student conducts research independently, avoiding plagiarism, and also minimizing the verbatim borrowing of his previously published works.

Practice involves familiarity with the work of dissertation councils: the study of regulatory materials governing their activities; clarification of the duties of the chairman of the dissertation council, his deputy and academic secretary of the dissertation council; familiarization with the rules of design, submission to the protection and defense of dissertations.

#### **10. Educational and methodical and informational support**

1. On the procedure for awarding academic degrees: Resolution of the Government of the Russian Federation from 24.09.2013 r. №842 // Official Internet portal of legal information <http://www.pravo.gov.ru>, 01.10.2013
2. GOST 7.0.11-2011 Thesis and dissertation dissertation. Structure and design rules. Access mode: <http://protect.gost.ru/document.aspx?control=7&id=179727>.
3. Raizberg B.A. Thesis and degree. Allowance for applicants. Moscow, INFRA-M, 2011.
4. Fundamentals of scientific work and the methodology of dissertation research / G.I. Andreev, V.V. Barvinenko, V.S. Willow and others. - M. : Finance and Statistics, 2012. - 296 c. - ISBN 978-5-279-03527-4 ; The same [Electronic resource]. - URL: <http://biblioclub.ru/index.php?page=book&id=221203>
5. Reference and legal system "Consultant Plus".
6. Reference and legal system "GARANT".
7. Site of HAC of the Ministry of Education and Science Russian Federation <http://vak.ed.gov.ru/>
8. Literature corresponding to the direction of the study.

#### **11. Material and technical support of research practice**

For the practice, you need specially equipped classrooms and a computer classroom with workstations providing Internet access, as well as multimedia equipment.

The implementation of the practice program should be provided by each graduate student's access to information resources — the institute library library of the RUDN University and the Internet network resources. To use ICT in the educational process, you must have software that allows you to search for information on the Internet, systematizing, analyzing and presenting information, exporting information to digital media.

Domestic premises must comply with applicable sanitary and fire regulations, as well as safety requirements.

#### **12. Intermediate certification forms**

According to the results of a scientific research, a graduate student submits a written scientific report. The report includes information of a general nature (surname, name, patronymic of the graduate student; type of research and location; topic of final qualifying work (Ph.D. thesis); period of scientific research), as well as information characterizing the content of the work of the graduate student and reflecting his research program.

The report should include the following information:

- on the implementation of individual tasks;
- To prepare and publish articles in journals included in the list of HAC and RISC;
- on the participation of a graduate student in significant conferences on the subject of his research;
- on participation in the research work of the department (with participation);
- on the degree of readiness of the final qualifying work (PhD thesis).

Documents containing information on the student's work results (for example, texts of articles or reports prepared by a graduate student) may be attached to the report.

### 13. Fund of appraisal funds for the intermediate certification of students in the discipline

#### REGULATION ON POINT-RATING SYSTEM on "Research"

##### Profile 06.01.07 «Plant Genetics»

**Number of credits per semester - 120.**

**Maximum points – 100.**

**Type of certification – test**

**Points are awarded according to the table:**

Controlled competence code	Types of student activities	Maximum amount of points
GPC-1	Participation in the setup of conference	10
PC-1		
PC-2	Research design	10
PC-3		
PC-4	Fulfillment of research plan	50
PC-6		
PC-7		
PC-8	Preparation of report	15
PC-9		
PC-8	Report in the department	15
PC-9		
Total		100

The results of each type of practice are determined by conducting an intermediate certification with scoring "excellent", "good", "satisfactory", "unsatisfactory" and in the ECTS system (A, B, C, E). The basis for their nomination is the University adopted a point-rating system:

Points PRS	Traditional grades in the Russian Federation	Points equivalent to grades	Grades	Grades ECTS
86- 100	5	95-100	5+	A
		86-94	5	B
69-85	4	69-85	4	C
51 -68	3	61 -68	3+	D
		51 -60	3	E
0-50	2	31 -50	2+	FX
		0-30	2	F

A graduate student cannot be certified if he has not mastered all the topics and sections of the discipline specified in the summary assessment table of the discipline "Safety in Emergency Situations". A section or topic of a discipline is considered mastered if a graduate student has

scored more than 50% of the possible number of points in this section (topic).

By the decision of the teacher and with the consent of graduate students who have not mastered the sections (topics) of the discipline under study, current monitoring of progress or repeated educational tasks on these topics or sections can be repeated. In this case, graduate students for this work counted the minimum possible positive score.


When a graduate student performs additional learning tasks, or re-passes current monitoring activities, his points will be counted in specific topics. **In this case, the total amount of points cannot exceed the maximum number of points set on these topics.**

**A graduate student is certified only if he has scored at least 51 points in a semester.**

**Implementor:**

Asst. Professor

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«Biological Sciences»



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