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**Federal State Autonomous Educational Institution of Higher Education  
PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA  
NAMED AFTER PATRICE LUMUMBA  
RUDN University**

**Academy of engineering**

(educational division (faculty/institute/academy) as programme developer)

**Department of Subsoil Use and Oil and Gas Engineering**

(department realizing the PhD program)

## SCIENTIFIC RESEARCH PLAN

Scientific specialty:

**1.6.9. Geophysics**

**1.6.10. Geology, prospecting, and exploration of solid minerals, minerageny**

**1.6.11. Geology, prospecting, exploration and exploitation of oil and gas fields**

(scientific speciality code and title)

The course instruction is implemented within the PhD programmes:

**Geophysics**

**Geology, prospecting, and exploration of solid minerals, minerageny**

**Geology, prospecting, exploration and exploitation of oil and gas fields**

(PhD program title)

### 1. DISIPLINE (MODULE) GOAL

The purpose of carrying out scientific research (carrying out scientific activities) is to prepare a dissertation for the scientific degree of Candidate of Sciences for defense.

### 2. REQUIREMENTS FOR LEARNING OUTCOMES

The solution of a scientific problem of importance for the development of the corresponding branch of science or the development of a new scientifically justified technical, technological or other solution of significant importance for the development of the country.

Preparation of the thesis for the defense includes the implementation of an individual plan of scientific activity, writing, registration and presentation of the thesis for the final attestation.

Plan of scientific activity includes a sample plan of scientific research, plan of dissertation preparation and publications, in which the main scientific results of the dissertation are set out, as well as a list of stages of mastering the scientific component of the graduate program, the distribution of these stages and the final certification of graduate students.

The plan of scientific activities of a particular student is approved in the individual plan of scientific activities of the graduate student, the requirements to which are established by the relevant local normative act of PFUR.

### 3. WORKLOAD OF THE DISCIPLINE AND TYPES OF ACTIVITIES

The overall workload of the scientific research is 150 credits (5400 academic hours).

### 4. RESEARCH CONTENTS

| Stages                                                    | Stage content (types of activities)                                                                                                                                                                                       | Workload, acad. hours |
|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| <b>First Year</b>                                         |                                                                                                                                                                                                                           |                       |
| Research activity aimed at preparing for a thesis defense | Theme 1: Choosing the topic of the dissertation dissertation plan                                                                                                                                                         | 1476                  |
|                                                           | Theme 2: Structure development and drafting                                                                                                                                                                               |                       |
|                                                           | Theme 3: Preparing a review of the dissertation topic                                                                                                                                                                     |                       |
|                                                           | Theme 4: Making a bibliography on the topic of the dissertation based on stock materials, monographs, scientific collections, domestic and foreign periodicals, as well as Internet resources (not less than 150 sources) |                       |
|                                                           | <b>Organization and conduct of experiments.</b> Theme 1: Collection, processing and analysis of scientific and statistical information on the topic of the dissertation work on stock and published works.                |                       |
|                                                           | Theme 2: Material, methodology and conditions for conducting experiments                                                                                                                                                  |                       |
|                                                           | Theme 3: Primary documentation of observations and experimental data.                                                                                                                                                     |                       |
|                                                           | Theme 4: Gathering empirical material (based on observations, experimental data).                                                                                                                                         |                       |
| Publication Activity                                      | Theme 1: Analysis of domestic and foreign Publications of scientific periodicals included in Scopus databases                                                                                                             | 216                   |
|                                                           | Theme 2: Selection of domestic and foreign Publications on the topic of the dissertation                                                                                                                                  |                       |
|                                                           | Theme 3: Studying the requirements for publications in periodicals of the Web of Science database                                                                                                                         |                       |
| Intermediate certification                                |                                                                                                                                                                                                                           | 72                    |
| <b>Second year</b>                                        |                                                                                                                                                                                                                           |                       |
|                                                           | <b>Organization and conduct of experiments.</b>                                                                                                                                                                           | 1404                  |

|                                                                                                   |                                                                                                                                                            |             |
|---------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Research activity aimed at preparing for a thesis defense                                         | Theme 1: Collection, processing and analysis of scientific and Statistical information on the topic of the dissertation work on stock and published works. |             |
|                                                                                                   | Theme 2: Material, methodology and conditions for conducting experiments                                                                                   |             |
|                                                                                                   | Theme 3: Primary documentation of observations and experimental data.                                                                                      |             |
|                                                                                                   | Theme 4: Gathering empirical material (based on observations, experimental data).                                                                          |             |
|                                                                                                   | <b>Methods and ways of processing empirical materials.</b>                                                                                                 |             |
|                                                                                                   | Theme 5: Graphic methods of processing materials.                                                                                                          |             |
|                                                                                                   | Theme 6: Statistical methods of material processing.                                                                                                       |             |
|                                                                                                   | Theme 7: Computer models.                                                                                                                                  |             |
|                                                                                                   | <b>Analysis and interpretation of empirical material.</b>                                                                                                  |             |
|                                                                                                   | Topic 8: Analysis and interpretation of empirical Computer-based materials for local objects.                                                              |             |
|                                                                                                   | Theme 9: Identification and formulation of natural laws characteristic of local objects.                                                                   |             |
|                                                                                                   | Theme 10. Analysis and interpretation of empirical materials based on computer technology for regional sites.                                              |             |
|                                                                                                   | Theme 11. Identification and formulation of natural laws characteristic of regional objects.                                                               |             |
|                                                                                                   | <b>Preparation of the thesis:</b>                                                                                                                          |             |
| Theme 1: Formulation of defensible scientific statements on the topic of the dissertation.        |                                                                                                                                                            |             |
| Theme 2: Writing Dissertation Chapters                                                            |                                                                                                                                                            |             |
| Theme 3: Making a list of literary sources and making references to them in the text dissertation |                                                                                                                                                            |             |
| Publication Activity                                                                              | Theme 1: Selection of domestic and foreign Publications on the topic of the dissertation                                                                   | 216         |
|                                                                                                   | Theme 2: Preparing manuscripts of articles for Publication in periodicals of the bases                                                                     |             |
|                                                                                                   | Theme 3: Presentations at scientific conferences and meetings on theses topics                                                                             |             |
| Intermediate certification                                                                        |                                                                                                                                                            | 72          |
| <b>TOTAL:</b>                                                                                     |                                                                                                                                                            | <b>1692</b> |
| <b>Third year</b>                                                                                 |                                                                                                                                                            |             |
| Research activity aimed at preparing for a thesis defense                                         | <b>Preparation of the dissertation:</b>                                                                                                                    | 1656        |
|                                                                                                   | Theme 1: Writing Dissertation Chapters                                                                                                                     |             |
|                                                                                                   | Theme 2: Making a list of literary sources and making references to them in the text of the dissertation                                                   |             |
|                                                                                                   | Theme 3: Preparation of the Dissertation Text                                                                                                              |             |
|                                                                                                   | Theme 4: Preparation of the text of the abstract                                                                                                           |             |
|                                                                                                   | Theme 5: Preparation of the Report and Preliminary Defense of the Dissertation                                                                             |             |
|                                                                                                   | Theme 6: Preparation of Documents Required for Defense at the Academic Dissertation Council                                                                |             |
|                                                                                                   | Theme 7: Selecting the opposing scientific organization and providing it with the materials of the thesis                                                  |             |
|                                                                                                   | Theme 8: Selection of scientific opponents and providing them with materials of the dissertation work.                                                     |             |

|                                                     |                                                                                                                    |             |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-------------|
|                                                     | Theme 9: Placement of the text of the dissertation in Internet resources, according to the requirements of the BAK |             |
|                                                     | Theme 10. Distribution of thesis abstracts for feedback from scientific organizations and specialists.             |             |
|                                                     | Theme 11. Preparing a Report for the Dissertation Defense at the Academic Dissertation Council                     |             |
| Publication Activity                                | Theme 1: Selection of domestic and foreign Publications on the topic of the dissertation                           | 216         |
|                                                     | Theme 2: Preparing manuscripts of articles for Publication in periodicals of the bases                             |             |
|                                                     | Theme 3: Presentations at scientific conferences and meetings on these topics                                      |             |
| Intermediate certification                          |                                                                                                                    | 72          |
| <b>TOTAL:</b>                                       |                                                                                                                    | <b>1944</b> |
| <b>Total academic hours of scientific research:</b> |                                                                                                                    | <b>5400</b> |

## 5. EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

*The place of scientific research shall comply with the current sanitary and epidemiological requirements, fire safety regulations and standards of health protection of the students.*

*The research plan requires classrooms that meet the safety requirements for academic work, if necessary, a computer room with workstations that provide Internet connection, as well as classrooms with multimedia equipment.*

## 6. INTERNSHIP LOCATION AND TIMELINE

Scientific research can be carried out both in structural subdivisions of RUDN University or in organizations of Moscow (stationary), and at bases located outside of Moscow (exit).

Conducting scientific research on the basis of an external organization (outside RUDN University) is carried out on the basis of an appropriate agreement, which specifies the terms, place and conditions for performing scientific research in the base organization. The deadlines for the implementation of scientific research correspond to the period indicated in the calendar academic schedule of the postgraduate program.

Practice dates can be adjusted in coordination with the Department of Doctoral Studies of the RUDN University

## 7. EDUCATIONAL-METHODOLOGICAL AND INFORMATION SUPPORT FOR SCIENTIFIC RESEARCH

*Regulatory documents regulating the process of preparation and defense of dissertations:*

Federal Law of August 23, 1996 No. 127-FZ «On Science and State Scientific and Technical Policy» — URL: <http://pravo.gov.ru/proxy/ips/?docbody=&nd=102043112>

Decree of the Government of the Russian Federation dated September 24, 2013 No. 842 «On the procedure for awarding academic degrees» — URL: <http://pravo.gov.ru/proxy/ips/?docbody=&nd=102167993>

GOST R 7.0.11-2011 System of standards for information, library and publishing. Dissertation and dissertation abstract. Structure and design rules.

*Internet Resources:*

ELS RUDN University and third party EBS, to which university students have access based signed contracts:

- RUDN Electronic Library System, <http://lib.rudn.ru/MegaPro/Web> ;
- ELS University Library Online, <http://www.biblioclub.ru> ;
- EBS Urayt, <http://www.biblio-online.ru> ;
- ELS Student Consultant, <http://www.studentlibrary.ru> ;

- EBS Lan, <http://e.lanbook.com> ;
  - EBS Trinity Bridge <http://www.trmost.ru>
- Databases and search engines:
- Electronic fund of legal and normative-technical documentation, <http://docs.cntd.ru> ;
  - Yandex search system [https:// www .yandex.ru](https://www.yandex.ru) ;
  - Google search system <https://www.google.com> ;
  - Reference database Scopus , <http://www.elsevierscience.ru/products/scopus>
- Educational and methodological materials for scientific research:*  
Guidelines for preparing dissertations and scientific publications.

## **8. ASSESSMENT TOOLKIT AND GRADING SYSTEM FOR EVALUATION OF PHD STUDENTS' COMPETENCES LEVELS AS SCIENTIFIC RESEARCH RESULTS**

Based on the results of the stages of scientific research, the PhD student submits a detailed oral or written report to the supervisor or to a department meeting. The report includes information characterizing the content of the PhD student's work and reflecting the implementation of scientific research.

The report must include information:

- about the degree of readiness of the dissertation;
- on the preparation and publication of articles in journals included in the list of Higher Attestation Commission, Russian Science Citation Index, Scopus, Web of Science and others equated to them and/or approved by the Academic Council of RUDN University;
- on the participation of a PhD student in scientific and technical events on the topic of his research;
- on participation in the research work of the department (with participation);
- other.

During the interim certification period, the supervisor provides feedback on the quality, timeliness and success of the PhD student's stages of scientific activity.

The results of scientific research for every six months of study are determined by conducting an intermediate certification with grades «excellent», «good», «satisfactory», «unsatisfactory» and in the ECTS system (A, B, C, D, E) in accordance with the rating system.

### **DEVELOPERS:**

Assistant Professor of the  
Department of Subsoil Use  
and Oil and Gas Engineering

A.E.Kotelnikov

### **HEAD OF THE DEPARTMENT**

Assistant Professor of the  
Department of Subsoil Use  
and Oil and Gas Engineering

A.E.Kotelnikov