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)

COURSE SYLLABUS

Methodology of Scientific Research
(course title)

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
2.6.12. Chemical technology for fuels and high-energy substances
2.8.4. Development and operation 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
Chemical technology for fuels and high-energy substances
Development and operation of oil and gas fields
(PhD program title)

2026 г.

1. DISCIPLINE (MODULE) GOAL

The objective of mastering the discipline «Methodology of Scientific Research» is to prepare for surrender candidate exams, and same the acquisition of knowledge, skills and experience in the research field, characterizing the stages of the formation of competencies and ensuring the achievement of the planned results of the development of the educational program.

2. REQUIREMENTS TO PHD-STUDENTS ON FINISHING THE COURSE

Mastering the discipline " Methodology of Scientific Research " is aimed at preparing for the candidate's examinations, as well as mastering the following competencies:

Know:

- methods of critical analysis and evaluation of modern scientific achievements,

as well as methods for generating new ideas when solving research and practical problems, including in interdisciplinary areas

- the main concepts of modern philosophy of science, the main stages of the evolution of science,

functions and foundations of the scientific picture of the world

- features of presenting the results of scientific activities in oral and written form when working in Russian and international research teams
- know the main range of problems (tasks) encountered in the chosen field of scientific activity, and the main methods (methods, algorithms) for solving them;
- the main sources and methods of searching for scientific information on the issues under study.
- methodological approaches to conducting theoretical and experimental research;
- principles of organization of theoretical and experimental research.

Be able to:

- analyze alternative options for solving research and practical problems and evaluate the potential gains / losses of the implementation of these options;
- when solving research and practical problems, generate new ideas that lend themselves to operationalisms based on available resources and constraints.
- use the provisions and categories of the philosophy of science for the analysis and evaluation of various facts and phenomena
- follow the norms accepted in scientific communication when working in Russian and international research teams in order to solve scientific and educational problems;
- make personal choices in the process of working in Russian and international research teams, evaluate the consequences of the decision made and be responsible for it to yourself, colleagues and society
- find (choose) the most effective (methods) for solving the main types of problems (tasks) encountered in the chosen field of scientific activity;
- analyze, systematize and assimilate the best practices in scientific research.

Own:

- analysis of methodological problems that arise when solving research and practical problems, including those in interdisciplinary areas;
- critical analysis and evaluation of modern scientific achievements and results of activities to solve research and practical problems, including in interdisciplinary areas.
- analysis of the main ideological and methodological problems, incl. interdisciplinary character arising in science at the present stage of its development;
-ownership of planning technologies in professional activities in the field of scientific research.
- effective analysis of the main ideological and methodological problems, including . interdisciplinary nature arising from work on solving scientific and educational problems in Russian or international research teams;

- technologies for evaluating the results of collective activities to solve scientific and educational problems, including those conducted in a foreign language;
- technologies for planning activities in the framework of work in Russian and international teams to solve scientific and scientific and educational problems;
- various types of communications in the implementation of work in Russian and international teams to solve scientific and scientific and educational problems.
- modern methods, tools and technologies of research activities;
- skills in preparing and implementing a program of theoretical and experimental research....

3. WORKLOAD OF THE DISCIPLINE AND TYPES OF ACTIVITIES

The overall workload of the discipline «Methodology of Scientific Research» is 1 credit units (36 academic hours).

Types of activities		Total ac. hrs.	Semesters
Classroom activities (total), including:		18	2
в том числе:			
Lectures (LC)		12	12
Laboratory activities (LA)		–	–
Practical lessons/Seminars (PC)		6	6
Independent work		18	18
Intermediate certification (test with assessment/exam)		36	36
Overall workload	ac. hrs.	36	36
	credits	1	1

4. CONTENT OF THE DISCIPLINE

Name of the discipline section	Contents of the section (topic)	Type of study work
Methodological foundations of research work	The structure of scientific knowledge. Forms of organization scientific knowledge. Sources and research conditions. Concepts and functions methodology with regard to to subsoil use and mountainous sciences.	LC, PC
Fundamentals of organizing scientific research	Definition of the object, subject, hypothesis, purpose and objectives of the study in relation to subsoil use and mountainous sciences. Research methodology, research topic and its relevance. Formulation of contradictions and main problem. Research methods methodology applicable to management in organizational systems. Methods theoretical research. Statistical methods and means of formalization.	PC
Logic in scientific research work	Stages of designing the logic of research: staging, self-research and decoration - innovative	PC
Presentation of scientific work	Formulation of research results. Presentation of research work. Scientific text: characteristic. Kinds, presentation forms. Formulation of research results. Dissertation as a specific type of scientific text.	PC

5. EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

Room Type	Room Equipment	Specialized educational / laboratory equipment, software and materials for mastering the discipline

Class for Seminars	Room for seminar-type classes, equipped with a set of specialized furniture, board (screen) and technical / multimedia gadgets	Not necessary
Self-Work Class	Room for self-working (can be used for lecture and seminars activities), equipped with a set of specialized furniture, board (screen) and technical / multimedia gadgets and computers with an access to EIPES	Not necessary

6. METHODOLOGICAL SUPPORT AND LEARNING MATERIALS

Main readings:

1. Zimnyaya I.A., Shatenkova E.A. Research work as a specific type of human activity. - Moscow-Izhevsk, 2001 - Access mode: https://tsitsabaza.ru/doc/66553.html :
2. Komlatsky V. I., Loginov S. V., Komlatsky G. V. Planning and organization of scientific research. Textbook. — M.: Phoenix. 2014. 208 p. - Access mode : https://www.studentlibrary.ru/book/ISBN9785222218402.html

Additional readings:

1. Kuzin F. Thesis: Methodology writing. rules design. Order protection. Practical manual for doctoral students, graduate students and undergraduates. -2nd ed., add. - M .: Os -89, 2001 - Access mode: http://nashaucheba.ru/v46189/
2. P.K. Petrov METHODOLOGY OF PREPARATION AND DEFENSE OF THE FINAL QUALIFICATION WORK OF MASTER STUDENTS. M.: Udmurt State University, 2020 https :// eee - science . ru / wp - content / uploads /2021/11/% D 0%9 F % D 0% B 5% D 1%82% D 1%80% D 0% BE % D 0% B 2-2020-% D 1%83% D 1%87.-% D 0% BF % D 0% BE % D 1%81% D 0% BE % D 0% B 1% D 0% B 8% D 0 % B 5.pdf

Internet sources:

ELS RUDN University and third party EBS, to which university students have accessbased 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 ;
- Google search system https://www.google.com ;
- Reference database Scopus , http://www.elsevierscience.ru/products/scopus

Educational and methodological materials for students' self-work studying the discipline / module:

A course of lectures on the discipline «Methodology of Scientific Research».

7. ASSESSMENT TOOLKIT AND GRADING SYSTEM FOR MIDTERM ATTESTATION OF STUDENTS IN THE DISCIPLINE (MODULE)

Assessment toolkit and a grading system to evaluate the level of competences (competences in part) formation as the course results are specified on the TUIS platform.

DEVELOPERS:

Assistant Professor of the Department
of Subsoil Use and Oil and Gas Engineering — T.V. Chekushina

HEAD OF THE DEPARTMENT
Assistant Professor of the Department
of Subsoil Use and Oil and Gas Engineering  A.E.Kotelnikov