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)

Departament of Innovation Management in Industrial Sectors
(department realizing the PhD program)

COURSE SYLLABUS

Methodology of scientific research
(course title)

Scientific specialty:

5.2.2. Mathematical, statistical and instrumental methods in economics
(scientific speciality code and title)

The course instruction is implemented within the PhD programmes:

Mathematical, statistical and instrumental methods in economics
(PhD program title)

2026

1. DISCIPLINE (MODULE) GOAL

The course "Methodology of Scientific Research" is a mandatory part of the educational component of the postgraduate program 2.3.4. Management in Organizational Systems and is studied in the second semester of the first year of the program.

The purpose of mastering the discipline "Methodology of Scientific Research" is to develop in-depth professional knowledge and practical skills in the field of organizing, planning and conducting scientific research, as well as in developing the competencies necessary for successful scientific activity and the preparation of dissertation research.

Objectives of the discipline:

1) study of the principles and forms of scientific research activities, the features of the design and presentation of the results of scientific work;
2) development of skills in planning and implementing scientific research;
3) mastering modern methods and approaches to organizing scientific research activities;
4) acquisition of skills in working with information resources and regulatory documentation;
5) development of the ability to critically analyze scientific achievements.

2. REQUIREMENTS TO PHD-STUDENTS ON FINISHING THE COURSE

As a result of mastering the discipline, the postgraduate student must:

know:

– modern trends in the development of science;
– fundamentals of the methodology of scientific knowledge;
– modern approaches to organizing scientific research, including dissertation preparation;
– principles of working with scientific information;
– requirements for the design of scientific papers;

be able to:

– plan and conduct scientific research;
– analyze, systematize and evaluate scientific achievements;
– find the most effective methods for solving research problems in the chosen field of scientific activity;
– present and justify the results of their scientific research in accordance with the standards accepted in the scientific community;

to have:

– skills in organizing scientific work;
– methods of scientific research, including in interdisciplinary fields;
– methods of analyzing ideological and methodological problems that arise when solving scientific problems;
– techniques for presenting scientific results;
– the opportunity for independent scientific work.

3. WORKLOAD OF THE DISCIPLINE AND TYPES OF ACTIVITIES

The total workload of the discipline “Methodology of scientific research” is 2 credit units (c.u.).

Table 3.1. Types of academic work by periods of mastering the postgraduate program

Type of educational work		TOTAL	Course 1
Contact work, academic hours		18	18
including:			
lectures (LC), academic hours		12	12
seminar classes (SC), academic hours		6	6
Independent work of students (IWS), academic hours		18	18
Control (test with assessment), academic hours		36	36
Total complexity of the discipline	academic hours	72	72
	credit units	2	2

4. CONTENT OF THE DISCIPLINE

Table 4.1. Content of the discipline by types of academic work

Name of the discipline section	Contents of the section (topic)	Type of study work
Section 1. Science and its role in modern society. Organization of scientific research in Russia and worldwide.	Topic 1.1. Science as a human activity. Principles of scientific activity. Structure and forms of organization of scientific knowledge.	LC, SC, IWS
	Topic 1.2. History and modern trends in the development of science	LC, SC, IWS
	Topic 1.3. Types of scientific research. Sources and conditions of research.	LC, SC, IWS
	Topic 1.4. Features of the organization of scientific research in Russia and abroad.	LC, SC, IWS
Section 2. Methodological foundations of scientific research	Topic 2.1. Concept of method, methodology, and methodology of scientific research. Classification of scientific research methods.	LC, SC, IWS
	Topic 2.2. Methods of scientific research and generation of new ideas. Identifying a relevant scientific task, defining a scientific problem, formulating a research topic. Scientific novelty.	LC, SC, IWS
	Topic 2.3. Methodology for structuring research work: defining the object, subject, hypothesis, goals and objectives of the research.	LC, SC, IWS
	Topic 2.4. Methods of working with information: methods of collecting and processing, analyzing and systematizing source data. Statistical methods and formalization tools	LC, SC, IWS
Section 3. Logic of research work	Topic 3.1. Stages of scientific research: initial stage, research stage, and implementation stage. Theoretical and practical significance of scientific work.	LC, SC, IWS
	Topic 3.2. Logic and structure of scientific work. Features of dissertation research.	LC, SC, IWS
Section 4. Presentation of scientific work	Topic 4.1. Presentation of Scientific Research Results.	LC, SC, IWS
	Topic 4.2. Scientific Text: Characteristics, Types, and Forms of Presentation. The Dissertation as a Specific Type of Scientific Text.	LC, SC, IWS
	Topic 4.3. Reporting on Scientific Research Results. Dissertation Defense.	LC, SC, IWS

5. EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

Table 5.1. Material and technical support for the discipline

Audience type	Auditorium equipment	Specialized educational/laboratory equipment, software and materials for mastering the discipline (if necessary)
Lecture	A lecture hall equipped with specialized furniture, a whiteboard (screen), and multimedia presentation equipment.	no
Seminar	An auditorium for conducting seminar-type classes, group and individual consultations, ongoing monitoring and midterm assessment, equipped with a set of specialized furniture and technical means for multimedia presentations	no
Computer class	A computer room for conducting classes, group and individual consultations, ongoing monitoring and midterm assessment, equipped with personal computers (25 units), a board (screen) and technical means for multimedia presentations	no
For independent work of students	A classroom for independent work of students (can be used for seminars and consultations), equipped with a set of specialized furniture and computers with access to the Electronic Information System (EIOS)	no

6. METHODOLOGICAL SUPPORT AND LEARNING MATERIALS

Main readings:

1) Afanasyev, V.V., Gribkova, O.V., Ukolova, L.I. Methodology and Methods of Scientific Research. Moscow: Yurait. 2023, 164 p.

2) Baiborodova, L.V., Chernyavskaya, A.P. Methodology and Methods of Scientific Research. Moscow: Yurait. 2024, 222 p.

3) Boush, G.D., Razumov, V.I. Methodology of Scientific Research (in Candidate's and Doctoral Dissertations): Textbook. Moscow: INFRA-M, 2020, 227 p. [Electronic resource]. URL: https://new.znanium.com/catalog/document?id=350432

4) Gorelov, N.A., Korableva, O.N., Kruglov, D.V. Methodology of Scientific Research. Moscow: Yurait. 2023. – 391 p.

5) Gorelov N.A., Korableva O.N., Kruglov D.V. Methodology of Scientific Research: Textbook and Workshop for Universities / 3rd ed., revised and expanded. Moscow: Yurait, 2024. – 390 p. ISBN 978-5-534-16519-7. Electronic text. Educational platform Yurait [website]. URL: https://urait.ru/bcode/536410.

6) Dreshchinsky V.A. Methodology of Scientific Research. – Moscow: Yurait. 2023. – 350 p.

7) Lebedev S.A. Methodology of Scientific Knowledge: Textbook for Universities. – Moscow: Yurait, 2024. – 153 p.

Additional readings:

1) Afanasyev V.V., Gribkova O.V., Ukolova L.I. Fundamentals of Educational Research Activity. – Moscow: Yurait. 2023. – 164 p.

2) Brylev A.A., Turchaeva I.N. Fundamentals of Research Work. – Moscow: Yurait. 2023. 205 p.

3) Gorovaya V.I. Research Work – Moscow: Yurait. 2023. – 104 p.

4) Komlatsky V.I., Loginov S.V., Komlatsky G.V. Planning and Organization of Scientific Research: Textbook. – Moscow: Phoenix. 2014. – 208 p. [Electronic resource]. URL: https://www.studentlibrary.ru/book/ISBN9785222218402.html.

5) Naidysh V. M. Concepts of Modern Natural Science: textbook. - M .: KnoRus, 2020. - 360 p.

6) Ponomarev A. B. Methodology of Scientific Research: textbook. manual / A. B. Ponomarev, E. A. Pikuleva. - Perm: Publishing house of Perm. National Research Polytechnic University, 2014. - 186 p.

7) Reznik S. D., Makarova S. N., Reznik S. D. Effective Scientific Supervision of Postgraduate Students: Monograph - M .: NITs INFRA-M, 2020. - 152 p. [Electronic resource]. URL: https://znanium.com/catalog/document?id=355408

8) Roy O. M. Methodology of scientific research in economics and management. - M.: Yurait. 2023. - 212 p.

9) Sinchenko G. Ch. Logic of the dissertation: Textbook. - M.: NITs INFRA-M, 2021. - 312 p. [Electronic resource]. URL: https://znanium.com/catalog/document?id=367478.

10) Skvortsova L. N. Fundamentals of scientific research: Textbook for universities. - M.: Lan. 2023. - 100 p.

11) Sladkova O. B. Fundamentals of research work. - M.: Yurait. 2023. - 155 p.

Resources of the information and telecommunications network "Internet":

– RUDN University's Electronic Library System (ELS) and third-party ELSs, to which university students have access under concluded agreements:

– RUDN University Library System: [website]. URL: http://lib.rudn.ru/MegaPro/Web

– Electronic Library System "University Library Online": [website].URL: http://www.biblioclub.ru/

– Educational platform "Yurait": [website]. URL: https://urait.ru/

– ELS "Lan": [website].URL: https://e.lanbook.com/

Databases and search engines::

– electronic fund of legal and regulatory information: [website]. URL: https://docs.cntd.ru/

– Yandex search engine: [site].URL: https://yandex.ru/

– Google search engine: [site]. URL: https://www.google.com/

Educational and methodological materials for independent work of students in mastering the discipline:*

A course of lectures on the subject "Methodology of scientific research".

*all teaching and methodological materials for independent student work are posted in accordance with the current procedure on the course page in TUIS!

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

Assessment materials and a point-rating system for assessing the mastery of the discipline are presented in the TUIS.

DEVELOPER:

Associate Professor of the Department of Mechanics and Control		Pilyugina E.V..
Position, BEU	*Signature*	*Surname, Name*

HEAD OF THE DEPARTMENT:

Head of Department of Mechanics and Control		Y.N. Razoumny
Position, BEU	*Signature*	*Surname, Name*