MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

NATIONAL TECHNICAL UNIVERSITY

«KHARKIV POLYTECHNIC INSTITUTE»

Department of Department of Pedagogy and Psychology of Social System Management named after I. A. Ziaziun

SELF-STUDY GUIDELINES

for the course "Fundamentals of Scientific Research"

for full-time students of the second (Master's) level of higher education,

specialty A1 "Educational Sciences",

educational program "Pedagogy of Higher Education"

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The purpose of studying the discipline is to provide students with systematized knowledge of the theoretical foundations of scientific research as well as to develop practical skills for the effective use of pedagogical methodology in organizing psychological and pedagogical research, designing a pedagogical research program, interpreting findings in accordance with the principles of academic integrity.

The main objectives of the discipline “Fundamentals of Scientific Research” are:

- to develop knowledge and understanding of conducting scientific activities in higher education;

- to foster skills in organizing and carrying out effective psychological and pedagogical research;

- to cultivate practical and procedural competencies in interpreting research results and confirming research hypotheses;

- to develop practical and procedural competencies for testing the results of psychological and pedagogical research in line with academic integrity.

Educational and methodological lecture materials

Plan of lecture classes

Topic	Hours
Introduction to the discipline. Subject, goal and objectives of the academic discipline. Science as a system. Essence and concept of science.	2
Scientific research, its appearance and characteristic signs.	2
Methodology and methods of scientific and pedagogical research.	2
Scientific research apparatus. The specificity and essence of scientific and pedagogical research.	2
Information support for scientific research works. The place of creativity in scientific activity.	2

General requirements for scientific research work. Fundamentals of academic writing.	2
Academic integrity and plagiarism prevention. Academic responsibility.	2
Approbation of research results. Pedagogical culture, ethics and skills of the researcher.	2

Topic 1: Introduction to the discipline. Subject, goal and objectives of the academic discipline. Science as a system. Essence and concept of science.

The concept of science as a special form of human activity, which has developed historically and has as its result purposefully selected facts, hypotheses, theories, laws and research methods. Subject, goal and objectives of the academic discipline.

Recommended references:

1. Hryhoruk P. M. Methodology and organization of scientific research: teaching manual. Kyiv: 2017. – 2 06 p.

2. Medvid V., Danko Yu. Methodology and organization of scientific research (in structural and logical diagrams and tables): textbook. Sumy: SNAU, 2020. – 220 p.

3. Sobol Kh. S., Petrovska N. I. Methodology and principles of scientific research: textbook. Lviv: Lviv Polytechnic, 2018. – 350 p.

4. Ignatyuk O.A. Theoretical and practical aspects of personal and professional self-development of master's students in the specialty "Higher School Pedagogy" /Current pedagogical technologies in education: a collection of scientific and methodological works. Kharkiv: NTU "KhPI", 2013. – P. 75-85

Topic 2. Scientific research, its appearance and characteristic signs.

Scientific research as a special form of the process of knowledge, its signs, types, stages, types of scientific research, logic of scientific research.

Recommended references:

1. Hryhoruk P. M. Methodology and organization of scientific research: teaching manual. Kyiv: 2017. – 206 p.

2. Medvid V., Danko Yu. Methodology and organization of scientific research (in structural and logical diagrams and tables): textbook. Sumy: SNAU, 2020. – 220 p.

3. Sobol Kh. S., Petrovska N. I. Methodology and principles of scientific research: textbook. Lviv: Lviv Polytechnic, 2018. – 350 p.

4. Ignatyuk O. A. Formation of the readiness of a future engineer to professional self-improvement: theory and practice: monograph. Kh.: NTU "KhPI", 2009. – 432 p.

Topic 3. Methodology and methods of scientific and pedagogical research.

The concept of methodology and methods of scientific and pedagogical research, the essence of the methodology of scientific and pedagogical research and methodological analysis, characteristics of groups of methods of scientific and pedagogical research.

Recommended references:

1. Grigoruk P. M. Methodology and organization of scientific research: textbook. Kyiv: 2017. – 206 p.

2. Golikov V. A.Methodology of scientific research: textbook. manual. Odesa: 2014. - 163 p.

3. Kustovska O. V. Methodology of the System Approach and Scientific Research: Lecture Course. Ternopil. 2005. 1 – 24 p.

4. Malygina V. D. Methodology of Scientific Research. Rivne: 2016. – 247 p.

5. Matvienkiv S. M. Methodology of Scientific Research: Teaching and Methodological Manual. Ivano Frankivsk: Precarpathian National University named after V. Stefanyk, 2010. – 84 p.

6. Mokin B. I. Methodology and Organization of Scientific Research:

Teaching and Methodological Manual. Vinnytsia: 2014. – 180 p.

Topic 4. Scientific research apparatus. The specificity and essence of scientific and pedagogical research.

General characteristics of methods of psychological and pedagogical research. Scientific research as a special form of cognitive activity in the field of pedagogy. Scientific research in the field of education.

Recommended references:

1. Grigoruk P. M. Methodology and organization of scientific research: textbook. Kyiv: 2017. – 206 p.

2. Golikov V. A. Methodology of scientific research: textbook. manual. Odesa: 2014. – 163 p.

3. Kustovska O. V. Methodology of the System Approach and Scientific Research: Lecture Course. Ternopil. 2005. – 124 p.

4. Malygina V. D. Methodology of Scientific Research. Rivne: 2016. -247 p.

5. Matvienkiv S. M. Methodology of Scientific Research: Teaching and Methodological Manual. Ivano Frankivsk: Precarpathian National University named after V. Stefanyk, 2010. – 84 p.

6. Mokin B. I. Methodology and Organization of Scientific Research: Teaching and Methodological Manual. Vinnytsia: 2014. – 180 p.

Topic 5. Information support for scientific research works. The place of creativity in scientific activity.

Integrative-algorithmic approach to working with scientific information and its sources. Procedural competence of the researcher: essay - the place of creativity in scientific activity, creativity of the teacher-researcher.

Recommended references:

1. Artemchuk G.I. Methodology of organizing scientific research work: a manual. Kyiv: Forum, 2000. – 270 p.

2. Bykov V. Yu. Models of organizational systems of open education: monograph. Kyiv: Atika, 2008. – 684 p.

3. Yerina A.M. Methodology of scientific research. Kyiv: Center for educational literature, 2004. – 212 p.

4. Ignatyuk O.A. Didactic features of the formation of readiness for scientific and pedagogical activity of master's students in the specialty "Higher school pedagogy" / Ignatyuk O.A. // "Theory and practice of social systems management: philosophy, psychology, pedagogy, sociology". Kharkiv: NTU "KhPI", 2014. - No. 2. – P.45-52 (professional scientific publication of Ukraine).

5. Romanovsky O. G. Business ethics: manual. Kharkiv: NTU "KhPI", 2006. – 364 p.

Topic 6. General requirements for scientific research work. Fundamentals of academic writing.

Preparation and writing of a scientific text: rules of academic writing.

Procedural competence of the researcher: working with sources of scientific products and preparing a review of a scientific work

Recommended references:

1. Law of Ukraine "On scientific and scientific and technical activity". V. 1977- XII of December 13, 1991 with changes and additions.

2. Golikov V. A. Methodology of scientific research: a textbook. Odesa. 2014. – 163 p.

3. Kostyukevich V. M. Methodology of scientific research: a textbook. Vinnytsia. 2017. – P. 172.

4. Kustovska O. V. Methodology of the system approach and scientific research: A course of lectures. Ternopil. 2005. – 124 p.

5. Malygina V. D. Methodology of scientific research. Rivne. 2016. – 247 p.

Topic 7. Academic integrity and plagiarism prevention. Academic responsibility.

Academic integrity is the totality of ethical principles and rules established by law. Code of Academic Integrity. Types of Academic Integrity. Principles of academic integrity (legality and rule of law, professionalism and competence, honesty and integrity, justice and tolerance, freedom and human dignity)

Recommended references:

1. Hryhoruk P. M. Methodology and organization of scientific research: teaching manual. Kyiv: 2017. – 206 p.

2. Medvid V., Danko Yu. Methodology and organization of scientific research (in structural and logical diagrams and tables): textbook. Sumy: SNAU, 2020. – 220 p.

3. Sobol Kh. S., Petrovska N. I. Methodology and principles of scientific research: textbook. Lviv: Lviv Polytechnic, 2018. – 350 p.

4. Ignatyuk O.A. Theoretical and practical aspects of personal and professional self-development of master's students in the specialty "Higher School Pedagogy" / Current pedagogical technologies in education: a collection of scientific and methodological works. Kharkiv: NTU "KhPI", 2013. – P. 75-85.

5. Yurinet V. E. Methodology of scientific research: navch. pos_b. Lviv. 2011. – 180 p.

Topic 8. Approbation of research results. Pedagogical culture, ethics and skills of the researcher

Research into the problem of pedagogical culture of current teachers in the scientific and educational space. Components of the pedagogical culture of a daily scientist.

Recommended references:

1. Artemchuk G.I. Methodology of organizing scientific research work: a manual / Kyiv: Forum, 2000. – 270 p.

2. Bykov V. Yu. Models of organizational systems of open education: monograph. Kyiv: Atika, 2008. – 684 p.

3. Yerina A.M. Methodology of scientific research: manual / Kyiv: Center for educational literature, 2004. – 212 p.

4. Ignatyuk O.A. Didactic features of the formation of readiness for scientific and pedagogical activity of master's students in the specialty "Higher school pedagogy" / Ignatyuk O.A. // "Theory and practice of social systems management: philosophy, psychology, pedagogy, sociology". - Kharkiv: NTU "KhPI", 2014. V 2. – P. 45-52 (professional scientific publication of Ukraine).

5. Romanovsky O. G. Business ethics: manual. Kharkiv: NTU "KhPI", 2006. – 364 p.

Methodological materials to ensure students' self-study

Students' self-study (SS) takes a leading place in the system of modern higher education. Of all the types of learning activities, the SS largely ensures the formation of independence as a leading trait of a student's personality.

Self-study completes the tasks of all other types of learning activities. After all, knowledge that has not become the object of one's own activity cannot be considered as true personal acquisition. Therefore, SS has educational, personal, and social significance.

Learning activity is characterized by subjectivity, activity, subject matter, purposefulness, structure and content.

Special features of self-study are as follows:

- changes in the subject itself;

- dependence on the level of development of the student and reliance on the achieved level of development;

- mastering general methods of action and scientific concepts;

- precedence of general methods of action to solving problems;

- dependence of changes in mental properties and behavior of students on the results of their own actions.

Performing self-study involves:

1. Working with educational literature using the university library and the Internet.

2. Studying the educational material given for independent work.

3. Acquiring knowledge, types and methods of activity in a particular subject area.

4. Self-checking of the acquired knowledge with the help of the presented questions.

If necessary, students may receive individual consultations from instructors regarding the completion of self-study tasks. For this purpose, the department prepares a schedule of teacher consultations each semester.

Questions for self-study

1. Explain the phenomenon of science as a form of human activity. Describe the main purpose of science.

2. Describe the components of science, the system of scientific knowledge.

3. Analyze the stages of obtaining scientific products.

4. Reveal the essence of epistemological, logical, methodological approaches to determining a scientific theory.

5. Describe the functions and factors of a scientific theory.

6. Analyze the path of formation of a scientific theory.

7. Reveal the essence of the concept of “scientific research” as a special form of the cognitive process.

8. Reveal the essence of methodology as the basis of scientific research.

9. Prove the importance of fundamental and applied research in the educational field.

10. Based on the independent study of scientific sources, the provided list of literature prepares:

- presentation (10-12 slides, general conclusions, literature);

- /or abstract report (up to 4-7 pages with a plan, text, general conclusions and reference to scientific sources).

References for self-study

1. Vazhynskyi S. E., Shcherbak T. I. Methodology and organization of scientific research: textbook. Sumy: SumSPU named after A. S. Makarenko, 2016. – 260 p.

2. Hryhoruk P. M., Khrushch N. A. Methodology and organization of scientific research: textbook.Kyiv, 2017. – 206 p.

3. Medvid V. Yu., Danko Yu. I., Koblyanska I. I. Methodology and organization of scientific research (in structural and logical diagrams and tables): textbook. Sumy: SNAU, 2020. – 220 p.

4. Sobol Kh. S., Petrovska N. I., Gunyak O. M. Methodology and principles of scientific research: textbook. Lviv: Lviv Polytechnic, 2018. – 350 p.

5. Shvets F. D. Methodology and organization of scientific research: textbook. Rivne: NUVGP, 2016. – 151 p.

6. Palekha Yu. I. Fundamentals of scientific research work: textbook. Kyiv. 2013. – 336 p.

7. Radionova I. F. Methodology of scientific research: applied aspect: textbook. Kyiv. KNEU. 2010. – 106 p.

8. Yurinets V. Ye. Methodology of scientific research: textbook. Lviv. 2011. – 180 p.

Methodological recommendations/educational resources for practical (seminar) classes

Plan of practical (seminar) classes

Topic	Hours
Scientific research, its types and features	2
Specificity and essence of scientific and pedagogical research, stages of its organization	2
Methodology and methods of scientific and pedagogical research	2
Technology and requirements for writing scientific articles, reports, abstracts	2
Technology of performance and protection of qualification (master's) scientific works	2
Integrative-algorithmic approach to working with scientific information and its sources	2
Violation of academic integrity and academic responsibility.	2
Formation of scientific and pedagogical culture of the researcher	2

Practical tasks for the classes

Practical lesson 1

TOPIC: Scientific research, its types and features.

Reveal the essence of the concepts of "scientific knowledge", "scientific research", characterize the types of scientific research, their features.

QUESTIONS FOR DISCUSSION

1. Scientific knowledge, its types (sensory, rational).
2. Scientific research as a special form of the cognitive process, their features.

3. Methodology as the basis of scientific research, its object and subject.

4. Types of scientific research by purpose (fundamental, applied).

PROBLEM QUESTIONS:

1. Reveal the concept of methodology as the basis of scientific research. Express your opinion. Justify your answer.

2. Name and characterize the main features of scientific research.

3. Analyze the field of fundamental research.

PRACTICAL TASKS:

• Suggest topics for fundamental (3) and applied (3) scientific research. Justify your proposals.

• Develop tests on any of the topics you propose (10 questions).

• Compile a bibliographic index of scientific publications (10 titles) on current issues in science and scientific research. Analyze their problems.

Practical lesson 2

TOPIC: Specificity and essence of scientific and pedagogical research, stages of its organization.

Disclose the essence and specificity of scientific and pedagogical research, analyze the categorical and conceptual apparatus of scientific and pedagogical research, characterize fundamental and applied scientific research in pedagogy.

QUESTION FOR DISCUSSION:

1. Scientific and pedagogical research as a special form of the process of cognition of pedagogical reality, its purpose.

2. Scientific direction, problem, topic and relevance of the research.

3. Object and subject, purpose and tasks of scientific and pedagogical research.

4. Criteria for the effectiveness of scientific and pedagogical research, requirements for its implementation.

5. Stages of organizing scientific and pedagogical research.

PROBLEM QUESTIONS:

1. Disclose the specificity of scientific and pedagogical research.

2. Reveal the role and significance of developments aimed at creating programs, textbooks, manuals, instructional and methodological recommendations on issues of organizing the processes of education and training; management of educational systems.

3. Justify the difference between fundamental research in pedagogy and applied research. Give examples.

PRACTICAL TASKS AND EXERCISES:

1. Develop a structural and logical diagram of the topic.

2. Compile a bibliographic index of scientific publications (15 positions) on the disclosure of current problems of scientific research in the field of education. Analyze their problems.

Practical lesson 3

TOPIC: Methodology and methods of scientific and pedagogical research.

Method of scientific knowledge: essence, content, main characteristics. Reveal the essence of the methodology of scientific and pedagogical research and the multi-level concept of methodological analysis.

QUESTION FOR DISCUSSION:

1. Methodology of scientific and pedagogical research.

2. Multi-level concept of methodological analysis.

3. Method of scientific and pedagogical research. Empirical methods of scientific and pedagogical research.

4. Theoretical methods of scientific and pedagogical research.

5. Meta-matical and statistical methods of scientific and pedagogical research.

PROBLEM QUESTIONS:

1. Demonstrate the use of deductive and inductive methods in scientific knowledge.

2. Reveal the role and importance of the methodology of scientific and pedagogical research to achieve its goal. Express your opinion.

PRACTICAL TASKS AND EXERCISES:

1. Develop a structural and logical scheme of the topic.

2. Supplement the bibliography on this topic.

3. For the topic “Means of Correcting the Moral and Psychological Climate in the Teaching Staff,” offer a list of research methods to achieve its goal. Justify your answer.

ESSAY TOPICS:

1.The method as an instrument of scientific research

2. Methodology of scientific research.

Practical lesson 4

TOPIC: Technology and requirements for writing scientific articles, reports, abstracts.

To study and characterize the results of scientific publications, analyze the technology and requirements for their writing.

QUESTIONS FOR DISCUSSION:

1. Types of scientific publications (monograph, article, abstract, preprint, abstracts, scientific report, collection of scientific works).

2. Technologies and requirements for writing scientific publications.

3. Culture of academic written works. Rules for the design of publications.

4. Abstract as a form of educational and research work.

5. The process of writing an abstract, its structure, requirements.

PROBLEM QUESTIONS:

1. Analyze the stages of writing an abstract. What is the implementation of the principle of scientific? Justify the answer.

2. Analyze the stages of writing a scientific article, a report thesis and a scientific report. What is the implementation of the principle of objectivity? The answer is clear.

3. Identify and describe the stages of writing a term paper. Argue the answer.

PRACTICAL TASKS AND EXERCISES:

1. Supplement the bibliography on this topic.

2. Develop a presentation on the topic: “Abstract as a form of educational and research work” (10 slides).

3. Propose a scientific problem, in accordance with which develop a preliminary topic and content of a scientific article or report thesis for participation in one of the conferences.

Practical lesson 5

TOPIC: Integrative-algorithmic approach to working with scientific information and its sources.

To reveal the essence and specifics of the algorithmic approach of students to scientific information, to characterize the procedural competence of the researcher.

QUESTION FOR DISCUSSION:

1. Organization of reference and information activities.

2. Search for documentary sources of information.

3. Working with sources and methods of keeping records, drawing up a plan.

4. Requirements for the language and style of scientific text.

PROBLEM QUESTIONS:

1. Reveal the main methods of searching for information.

2. Reveal the role and significance of information for scientific research

3. Prove the importance of the competence of the researcher in scientific activity.

PRACTICAL TASKS AND EXERCISES:

1. Make a bibliographic index of scientific publications (10 positions) for the disclosure of work on scientific information and its sources.

2. Based on independent processing of scientific sources, the provided list of literature, prepare: - a presentation (10-12 slides).

3. Systematize the sources of information by filling out the table form suggested by the teacher.

Practical lesson 6.

TOPIC: Technology of performance and protection of qualification (master's) scientific works.

Disclose and characterize the types of qualification works, study the technology of execution and defense of qualification (master's) works.

QUESTION FOR DISCUSSION:

1. General characteristics of the types of qualification works. Master's qualification work as an independent research work.
2. Basic requirements, algorithm for execution of master's qualification work.
3. Stages of execution of master's qualification work.
4. Technical requirements for execution of master's qualification work.
5. Preparation for defense of master's qualification work.

PROBLEM QUESTIONS:

1. Analyze the difference between scientific publications and qualification works. Justify your answer.
2. Analyze the criteria and conditions for evaluation of master's qualification works.

PRACTICAL TASKS AND EXERCISES:

1. Suggest a topic for your master's thesis, make a preliminary selection of the source base.
2. Study the basic requirements for master's theses (Methodological recommendations for the organization, implementation and defense of master's theses: the goal and objectives of your master's research, highlight the object and subject and the meaning of your scientific work.
3. In line with the scientific problem of your master's thesis, develop an algorithm for its implementation according to the stages of organizing the research.

ESSAY TOPICS:

1. Selecting a research topic and forming a literary base as the main requirements for completing a master's thesis.
2. Stages of completing a master's thesis.

3. General scientific principles for completing master's thesis.

Practical lesson 7

TOPIC: Violation of academic integrity and academic responsibility.

To clarify the essence of academic integrity, characterize the types of violations of academic integrity, reveal the concept of academic responsibility, its types.

QUESTIONS FOR DISCUSSION:

1. Academic integrity, its values and principles.
2. Violation of academic integrity, types of violations.
3. Tools for combating and preventing plagiarism.
4. Academic responsibility, its types.
5. The procedure for identifying and establishing facts of violation of academic responsibility.

PROBLEM QUESTIONS:

1. Prove that fabrication, falsification, plagiarism are violations of academic integrity.
2. Prove that re-taking an assessment (test, exam, final exam, etc.); Repeating the relevant educational component of the educational program is a type of academic responsibility.
3. Get acquainted with the observance of academic integrity by participants in the educational process. Analyze the elements of the education quality system at the university aimed at establishing academic integrity. Express your own opinion on their need (choose three elements).

PRACTICAL TASKS AND EXERCISES:

1. Review available Internet resources on academic integrity issues.

Describe them, clarify the topic, the problems raised.

2. Develop tests on the topic of the seminar "Academic integrity, fundamental values and principles" (10 questions).

Practical lesson 8

TOPIC: Formation of scientific and pedagogical culture of the researcher.

The purpose of this topic is to analyze the theoretical foundations
formation of pedagogical culture of future scientists.

QUESTIONS FOR DISCUSSION:

1. 1. Scientific culture of a higher education teacher
2. Information culture as a component of the scientific culture of a researcher.
3. Research ethics as a component of the scientific culture of a researcher.
4. Academic culture (essence, structure, functions)
5. Innovation in education. Innovation culture as a component of the scientific culture of a researcher.

PROBLEM QUESTIONS:

1. Analyze the procedural competence of the researcher: Implementation of the approbation of the research results, preparation of a speech with a presentation
2 Analysis of pedagogical aspects of a scientific article

Task:

-Choose a scientific article from your field. Analyze it from the point of view of scientific and pedagogical culture:

-What pedagogical techniques were used to argue and present the results?

-What conclusions of the article can be used to build lectures or scientific discussions?

PRACTICAL TASKS AND EXERCISES:

1. Supplement the bibliography for this topic.
2. Develop a presentation on the topic proposed by the teacher (10 -12 slides).
3. Write an essay on the topic proposed by the teacher in accordance with the methodological recommendations.

Recommended references:

1. Grigoruk P.M., Khrushch N.A. Methodology and organization of scientific research: textbook. Kyiv, 2017. – 206 p.
2. Golikov V.A., Kozminykh M.A., Onishchenko O.A. Methodology of scientific research: textbook. Odessa. 2014. – 163 p.
3. Ilchenko O.Yu. Biographical method in historical and pedagogical research: essence, principles, specificity. Pedagogical Sciences: collection of scientific papers. Poltava, 2021. Issue. Seventy-seven pp. 61- 67pp.
4. Kostyukevich V.M., Konnova M.V. Methodology of scientific research: textbook. Simferopol. 2017. – 172p.
5. Kustovskaya O. V. Methodology of a systems approach and scientific research: Lecture course. Ternopil. 2005. – 124 p.
6. Malygina V. D. Methodology of scientific research. Rivne. 2016. – 247 p.
7. Medved V. Yu., Danko Yu. I., Koblyanskaya I. I. Methodology and organization of scientific research (in structural and logical schemes and tables): textbook. Sumy: SNAU, 2020. – 220p.
8. Matvienko S. M. Methodology of scientific research: textbook and method. Ivano-Frankivsk: V. Stefanyk Precarpathian National University, 2010. – 84 p.
9. Palekha Yu. I. Fundamentals of scientific research work: textbook. Kyiv. 2013. – 336 p.
10. Radionova I. F. Methodology of scientific research: applied aspect: tutorial. Kyiv. KNEU. 2010. – 106 p.
11. Yurinets V. E. Methodology of scientific research: tutorial. Lviv. 2011.– 180 p.

Methodological instructions/recommendations for completing an individual assignment

1.Theoretical task. Report - volume 10-12 pages.

Prepare a presentation based on the report - at least 10 slides.

General requirements for the abstract

- The style is scientific.
- The sequence is logical.
- Page format - A4.
- Font and size - Times New Roman, 14.
- Line spacing - one and a half.
- The volume of the abstract: 5-10 pages (school), 10-20 pages (student), 15-30 pages (for applicants to graduate school).
- Margins: left margin - 30 mm, right margin - 15 mm, top and bottom margin - 20 mm (or 25 mm and 20 mm, respectively, depending on the conditions of the educational institution).
- Simple outline - 1-2 sections.
- The list of references should include 10-15 titles.
- Section headings are written in CAPITAL letters.
- Subsection titles are written in lowercase letters (except for the first one).

A standard report traditionally consists of several parts: Title page; Table of Contents; Introduction; Body; Conclusion; and References.

The table of contents contains a list of sections, subsections, and page numbers to them. Often, instead of the table of contents, you are required to write an outline. The plan can be simple, when you need to list the names of the paragraphs of the essay in a numbered list, and complex, when in addition to the paragraphs, you also indicate their subparagraphs.

An introduction usually lasts a page and a half. Its main purpose is to introduce the reader to the essence of the problem. The introduction justifies the choice of the topic (why it is important) and its relevance. We outline the goals and

objectives of the work. If necessary, make a brief review of the sources used. If you can't write an introduction at first, you can do it after writing the conclusion, when all your thoughts are systematized and finalized.

The main body. Before you start writing the main body, you need to decide on the titles of chapters and paragraphs - the main requirements for an abstract. Next, you should build a chain of presentation so as not to disrupt the sequence of thoughts and not to deviate from the given topic. Highlight the main aspects as much as possible; the main part of the essay should outline the main concepts set forth in the sources. Be sure to cite the author if you use quotations: this is an indicator of your scientific “savvy”. When citing, make references. There are several options for their formatting, for example, footnotes can be placed at the end of the page, or they can be indicated briefly in square brackets with the number of the source in the bibliography and the original page of the quote ([10, p. 355]), so it is better to clarify their formatting in advance.

Conclusion. The conclusion summarizes the main topic in a concise form and presents the author's own view of the problem and its solution.

A list of references, or bibliography, is a systematic compilation of a list of sources used. In other words, it is information that even an outsider can use to find a particular book. The list is compiled in alphabetical order on the last page.

The topic of the report can be chosen by the applicant in accordance with the principle of academic freedom, in consultation with the teacher, and within the framework of the educational component.

Approximate topics of reports and abstracts.

1. Historical stages of development of science.
2. Role and significance of fundamental research in pedagogy.
3. Role and place of research activity in educational process.
4. Theoretical and methodological principles of science.
5. Science in modern society.

6 Levels of methodological analysis of scientific and pedagogical research.

7. Methodology at the level of philosophical reflection.

8. Methodology as a set of techniques of practical activity.

9. Empirical methods of research in scientific and pedagogical research.

10. Culture of academic written works.

11. Scientific publication. Concept. functions. main types.

12. Models of systems and their classification.

13. Stages of implementation of master's qualification work.

14. General scientific principles for completing master's theses

15. Implementation of the principle of academic virtue in completing a master's theses.

16. Academic integrity as a basis for sustainable development of an institute.

17. Tools for combating and preventing plagiarism: experience of foreign countries.

18. The concept of academic responsibility. Types of academic responsibility of applicants for higher education.

19. The main stages of preparing a dissertation.

20. Formation and methods of uniting a scientific team.

21. Psychological aspects of relationships. Conflict management.

22. Scientific organization and hygiene of a scientist's mental work.

Moral responsibility of a scientist.

23. Organizational forms of transferring the results of scientific work.

24. Standards of scientific ethics.

25. Requirements for diploma and term papers.

26. Stages of conducting scientific research.

27. General and special methods of scientific knowledge.

28. The problem of "brain drain" and ways to solve it.

29. Features and stages of conducting scientific experiments.

30. The main types of normative and technical information.

II. Creative assignment.

Essay on the topic: “The method as an instrument of scientific research” or “Methodology of scientific research”.

Write an essay in accordance with the methodological recommendations.

Methodical recommendations for completing tasks of Essay writing.

The purpose of independent work: development of skills of independent creative thinking and written presentation of one's own thoughts, the ability to logically correctly and clearly construct oral and written speech.

Essay is "a genre of philosophical, literary-critical, historical-biographical, journalistic prose, combining the author's emphasized individual position with a relaxed, often paradoxical presentation oriented towards colloquial speech.

Signs of an essay:

- small volume - from 3 to 5 pages of computer text;

-a specific topic and an emphatically subjective interpretation of it.

- free composition is an important feature of an essay.

- informality of narration.

-Use of paradoxes. An essay aims to surprise the reader;

according to many researchers, this is its essential characteristic.

-internal semantic unity.

- focus on colloquial speech. At the same time, it is necessary to avoid using slang, cliched phrases, abbreviations, and an overly frivolous tone in an essay.

Completing the task:

1) write an introduction (10–12 sentences to introduce and frame the problem).

2) formulate a problem that should be important not

only for the author, but also for others;

3) comment on the issue;

4) formulate the author's opinion and provide arguments;

5) write a conclusion and generalize your essay.

Volume – up to 5 pages.

III. Test tasks:

Test 1. Select and indicate the only correct answer:

1. Science and scientific research in historical retrospect and modern dimension

Test tasks on the content of the module topics

1. Continue the list of components of the system of scientific knowledge:

- theory;
- laws;
- .....;
- .....;
- .....

2. Write out from the presented series of pedagogical and historical-pedagogical research methods

theoretical methods:

a) survey; b) experimental conversation; c) logical processing of text;

d) observation; e) retrospective analysis;

g) analysis of archival sources

3. Theoretical research is based on such logical constructions that were the result of generalizing the centuries-old experience of human society, namely:

a) axioms, laws and principles;

b) postulates and theorems;

c) hypotheses.

4. The characteristic features (paradigms) of science are:

a) structure, hierarchy, problematic;

b) expediency, purposefulness and efficiency;

c) specific focus, controllability (direction).

5. A necessary element of science associated with the use of experience and knowledge of previous generations are:

a) intuitive thinking; b) imitation; c) imagination; d) insight.

6. A scientific conclusion on an objective analysis of the consequences of studying a given problem is designated by the term:

a) creative imagination; b) guess; c) scientific forecast; d) imagination.

7. A system of techniques or methods used in carrying out scientific research is expressed by the term:

a) methodology; b) method; c) experiment; d) model.

8. An artificial system that reproduces the main features of the object under study is designated by the term:

a) methodology; b) method; c) experiment; d) model.

9. The following are aimed at obtaining and using knowledge for practical purposes (select the correct answer):

a) fundamental research;

b) system research; c) applied research.

10. Depending on the goals set, meetings are divided into (select the correct answers):

a) local; b) fundamental;

c) system; d) applied; d) budget.

Test 2. Select and indicate the only correct answer:

1. The coursework solves the following tasks:

a) Brief summary of the research results.

b) Independent analysis of concepts on the problem under study.

c) Determination of the relevance, object and subject of the study.

d) All options are correct.

2. The main characteristics of coursework:

a) Purpose of the study.

b) Object of the study.

c) Subject of the study.

d) Research tasks.

d) All options are correct.

3. The object of the study in the coursework and diploma thesis answers the questions:

a) "What is the name of the study?".

b) "What is considered in the study?".

c) "What needs to be done to achieve the goal?".

d) "What result does the researcher plan to obtain?".

4. The main part of the coursework includes:

a) Analysis of the literature.

b) Presentation of the position of the author of the coursework.

c) Results of the independently completed fragment of the study.

d) All options are correct.

5. An abstract is necessary to:

a) Highlight the most important parts of the text.

b) Convey information in abbreviated form.

c) Preserve the main content of the text read.

d) All options are correct.

6. An exact excerpt from any text:

a) Review.

b) Quote.

c) Abstract.

d) All options are correct.

7. When preparing to defend a dissertation, you need to:

A) Compose the text (thesis) of the speech.

B) Design visual aids (slides, etc.).

C) Compose options for responding to the reviewer's comments.

D) All options are correct.

8. The most important conclusions reached by the author of the coursework or diploma work:

a) Appendices.

b) Introduction.

c) Conclusion.

d) Main body.

9. The introduction of a scientific paper must reflect:

a) Relevance of the topic.

b) The results obtained.

c) The sources used in writing the paper.

10. The conclusions must indicate:

a) Only the final results without evidence.

b) The results with justification and argumentation.

c) Briefly repeat the entire course of the work.

11. The main function of the observation method:

a) recording and registering facts;

b) reflection in the human mind of objective reality;

c) obtaining knowledge from the particular to the general

12. The assumption about the main results of a scientific paper, made on the basis of an analysis of scientific sources in accordance with the laws of science, taking into account one's own observations, is:

a) the object of research; b) the subject of research;

c) the hypothesis of the research; d) the research methodology.

13. The correct sequence of the stages of the abstract:

a. title page - content - introduction - main content - conclusion - list of used literature - appendices;

b. title page – introduction – content – main content – conclusion – list of references – appendices;

c. title page – content – introduction – main content – list of references – conclusion – appendices;

d. title page – content – introduction – main content – conclusion – appendices – list of references.

14. Choose the correct judgment:

a) the subject is broader than the object of the study;

b) the subject and object of the study are equivalent to each other;

c) the object is broader than the subject of the study.

15. The introduction to a scientific work must contain all the necessary qualification characteristics (indicate the wrong answer):

a) relevance of the research topic on the critical analysis of literary sources;

b) purpose, objectives, object and subject of the study;

c) research methods;

d) theoretical significance and practical value of the work;

d) research methodology.

IV. Theoretical task

Complete the task. Systematize the sources of information in fill in the table form.

- books;
- encyclopedias;
- reference books;
- catalogues;
- magazines;
- prospectuses;
- television, radio;
- mass advertising activities;
- legislative and regulatory acts;
- meetings, conferences, presentations, open days;
- speeches by government, political and public figures;
- published reports;
- interviews with executives and specialists;
- highly specialized periodicals;
- manuals, textbooks;
- printed advertising of enterprises;

- requests to information systems, databases and banks of computer data;
- cooperation and exchange of information on Internet portals;
- specialized exhibitions and fairs;
- visits to enterprises;
- communication with specialists

Sources of information	Types
Printed publications	
Special publications	
Advertising products	
Legal documents	
Public events	
Media channels	
Internet resources	
Personal communication channels	

Educational and methodological materials for current, intermediate and final control

1. Science as a form of human activity. The main goal of science.
2. Constituent sciences. System of scientific knowledge
3. Scientific activity. Functions of scientific activity.
4. Scientific research, its types and characteristics
5. Scientific research as a form of the cognitive process and its types.
6. The concept of the methodology of science.
7. The role of methodology in determining the prospects for the development of psychology and pedagogy in modern conditions.
8. Methodological requirements for the conduct and results of research.
9. Methods of scientific knowledge. Classification of methods of scientific knowledge.

10. Types and features of scientific research.

11. Formulation of the main elements of research.

12. Categorical apparatus of scientific and pedagogical research.

13. Criteria for the effectiveness of scientific and pedagogical research, requirements for its implementation.

14. Stages of organization of scientific and pedagogical research.

15. Scientific novelty and its types

16. Information support of scientific research works.

17. Characteristics of types of qualification works

18. Components of the scientific research apparatus.

19. Forming the results of scientific work.

20. Observation as a method of collecting pedagogical information.

21. Conversation as a method of research. Survey methods in the structure of psychological and pedagogical research

22. General characteristics of types of qualification works.

23. General requirements for writing scientific papers.

24. Abstract as a form of educational and research work.

25. Rules of academic writing.

26. Approbation of the results of scientific research.

27. Stages of master's qualification work.

28. Master's qualification work, requirements for its writing.

29. Characteristics of types of qualification works.

30 Technical requirements for registration of qualification work. Preparation for defense and defense of qualifying work.

31. Scientific integrity and ethics of a scientist

32. Professionally important qualities of a teacher-researcher.

33. Survey methods in the structure of psychological and pedagogical research. Place, functions of survey methods.

34. Testing. General provisions, merits and demerits of this method.

35. Questionnaire survey. Types, advantages and disadvantages of this method

36 Conversation as a method of research. Functions, types.

37. Interview. Peculiarities of conducting.

38. Academic integrity and principles of academic integrity.

39. Concept of academic responsibility. Types of violation of academic integrity

40. Instruments of combat and prevention of plagiarism, experience of foreign countries.

Materials for studying

Basic

1. Grigoruk P.M., Khrushch N.A. Methodology and organization of scientific research: textbook. Kyiv, 2017. – 206 p.

2. Golikov V.A., Kozminykh M.A., Onishchenko O.A. Methodology of scientific research: textbook. Odessa. 2014. – 163 p.

3. Ilchenko O.Yu. Biographical method in historical and pedagogical research: essence, principles, specificity. Pedagogical Sciences: collection of scientific papers. Poltava, 2021. Issue. Seventy seven . P. 61-67

4. Kostyukevich V.M., Konnova M.V. Methodology of scientific research: textbook. Simferopol. 2017. Vol. 172.

5. Kustovskaya O. V. Methodology of a systems approach and scientific research: Lecture course. Ternopil. 2005. – 124 p.

6. Malygina V. D. Methodology of scientific research. Rivne. 2016. – 247 p.

7. Medved V. Yu., Danko Yu. I., Koblyanskaya I. I. Methodology and organization of scientific research (in structural and logical schemes and tables): textbook. Sumy: SNAU, 2020. – 220 p.

8. Matvienko S. M. Methodology of scientific research: textbook and method. Ivano-Frankivsk: V. Stefanyk Precarpathian National University, 2010. – 84 p.

9. Palekha Yu. I. Fundamentals of scientific research work: textbook. Kyiv. 2013. – 336 p.

10. Radionova I. F. Methodology of scientific research: applied aspect: tutorial. Kyiv. KNEU. 2010. –106 p.

11. Yurinets V. E. Methodology of scientific research: tutorial. Lviv. 2011. – 180 p.

Further reading

1. Artemchuk G. I. Methodology of organizing research work: tutorial. Kyiv: Forum, 2000. – 270 p.

2. Bykov V. Yu. Models of organizational systems of open education: monograph / V. Yu. Bykov. - Kyiv: Atika, 2008. – 684 p.

3. Belukha M. T. Methodology of scientific research [Text]: textbook for bachelors, masters and postgraduate students of economics specialty higher. educational institutions of education. - Kyiv: ABU, 2002. – 480 p.

4. Ganin V. I. Methodology of socio-economic research [Text]: textbook. manual. for students of higher. educational institutions of education. - Kharkov: HarTEI KNTEU. Kyiv: Center for educational literature, 2008. – 224 p.

5. Grishchenko I. M. Fundamentals of scientific research: textbook. manual. – Kyiv. – 2001.

6. Erina A. M. Methodology of scientific research: textbook. manual. - Kyiv: Center for Educational Literature, 2004. – 212 p.

7. Klimenyuk O. V. Presentation and Design of Scientific Research Results [Text]: textbook/ - Kyiv; Nizhyn: Aspekt-Poligraf, 2007. – 398 p.

8. Kovalchuk V. V. Fundamentals of Scientific Research [Text]: textbook. manual. / V. V. Kovalchuk, L. M. Moiseyeva. - 2nd ed., revised. and enlarged. - Kyiv: Professional, 2004. – 208 p.

9. Krushelnytska O. V. Methodology and Organization of Scientific Research [Text]: textbook. manual. for higher educational institutions / Kyiv: Kondor, 2009. – 206 p.

10. Scientific developments, advanced technologies, innovations: [collection of scientific papers and abstracts of scientific reports based on the materials of the International scientific and practical conference]. – Budapest-Prague-Kyiv – Kyiv: KNLU, NIIER, 2014. – 212 p.

11. Program, guidelines and control tasks of the course "Fundamentals of scientific research" for students of the educational and qualification level "master" in the specialty 011 "Educational, pedagogical sciences" specialization 8.18010021 "Pedagogy of higher education" of full-time and correspondence forms of education / compiled by A. G. Romanovsky, A. A. Ignatyuk. – Kharkov: NTU "KhPI", 2017. – 44 p.

12. Sandor F.F. Fundamentals of scientific research: course of lectures/F.F. Sandor, N.V. Dubovich. – Uzhgorod: “Breza”, 2014. – 200 p.

Electronic resources

1. http://library.kpi.kharkov.ua/
2. http://web.kpi.kharkov.ua/

Навчальне видання

Методичні вказівки до самостійної роботи з навчальної дисципліни
«Основи наукових досліджень»
для студентів денної форми навчання другого (магістерського) рівня вищої освіти за спеціальністю А1 «Освітні науки», освітня програма «Педагогіка вищої школи»

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