

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

SUMY NATIONAL AGRICULTURAL UNIVERSITY

I APPROVE

Chairman of the Admissions Committee

_____ Volodymyr LADYKA

"__" _____ 2021

PROGRAM OF ENTRANCE TEST

"Scientific Research Fundamentals "

for entrants to study at the third (educational and scientific) level of higher education in all areas

Sumy - 2021

The program of entrance examination on " Scientific Research Fundamentals " for entrants to study at the third (educational and scientific) level of higher education in all areas. - 2021. –12 p.

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INTRODUCTION

Important requirements for entrants to obtain the third educational and scientific level and the successful mastering of the educational and scientific program of training a doctor of philosophy are the assessment of their knowledge and competencies in mastering the elements of research activities; reasonable choice of methodology and research methods on selected issues; applicants have the ability to independently organize, plan and conduct research; skills to analyze, synthesize and design the results of scientific research within the scientific field.

The purpose of the entrance test on the "Fundamentals of Scientific Research" - to comprehensively assess the level of basic and applied knowledge and skills in the basics of scientific research, skills and preparedness of entrants to conduct research in certain fields of knowledge; to select the most suitable for research based on the results of competitive selection.

The program of the entrance examination in the discipline "Fundamentals of Scientific Research" reflects the general range of qualification requirements for knowledge of applicants, which form their ability to reasonably use methodological principles and methodological approaches to research on selected issues.

The organization of the entrance exam is carried out in accordance with the Rules of admission to Sumy National Agrarian University in 2021.

CONTENTS OF THE ENTRANCE EXAMINATION PROGRAM

Topic 1. Methodology: essence, content, concept. Modern content and functions of science. Science as a result and a special kind of human cognitive activity. Laws and trends in science. The content, structure and significance of the course for the scientific training of the applicant. Scientific knowledge. Laws of nature and laws of science. Laws and trends in science.

Topic 2. Dialectical and logical foundations of scientific knowledge. Dialectics as a system of principles, laws and categories. Formal logic in scientific cognition. Types and rules of evidence in the process of scientific knowledge. The concept of refutation and its logical structure. The concept of the principles of dialectics in scientific research. Categories of dialectics, their role in cognition of the real world. Laws of logic.

Topic 3. The content and structure of the research process. The problem of truth.

Subject and object of scientific research. Logical and sensory cognition, their basic forms. The problem of truth in philosophy and science. Science in the system of society. The main features of scientific knowledge. Prerequisites for scientific thinking and activity. Scientific and non-scientific knowledge. Research as a reflection and as creativity.

Topic 4. The main stages and forms of the research process. Identification, formation and formulation of a scientific problem. Formation and substantiation of scientific hypotheses. The formation of a scientific theory is the main stage in the process of scientific research. The main stages of scientific research and the logic of their cognitive cycle. Practical and theoretical reasons for the problem. The essence, nature and solutions of the scientific problem.

Topic 5. Organization of research work. Types and forms of research work. Choice of methodological approaches, methods and research methods. Planning of research work of the applicant of the corresponding degree. Literature abstracting. Organization of research. The scientific publication, methods of preparation and design. Organizational aspects of public approbation of research results (abstracts, report, presentation).

Topic 6. Registration of research results and their implementation in practice. Systematization of research results. Types of systematization of research results and their content. Organizational aspects of empirical research; implementation of results in management practice.

Topic 7. Organizational aspects of public defense of research results.

Preparation of a report and presentation of scientific results. Participant's participation in the scientific discussion. Documenting the course of public defense of research. Integrity in research.

THE LIST OF QUESTIONS OF ENTRANCE EXAMINATION ON A SUBJECT "FUNDAMENTALS OF SCIENTIFIC RESEARCHES"

1. The main stages of scientific research and the logic of their cognitive cycle.
2. Types and forms of research work of applicants for educational degrees.
3. Method of correlation-regression analysis: essence, features of the application.
4. Practical and theoretical reasons for the problem of scientific research.
5. Planning of research work by the degree seeker.
6. Methods of empirical research: essence, features of application.
7. Science in the system of society. The main features of scientific knowledge.
8. Formulation of scientific hypotheses and scientific theories, their justification.
9. System approach in research as a complex knowledge of the object.
10. Prerequisites for scientific thinking and activity. Scientific and non-scientific knowledge.
11. Literature review: purpose, features, results.
12. Methods of theoretical research: essence, features of application.
13. Specifics of scientific knowledge.
14. Performance of qualification research: tasks, structure, terms, reports.
15. The method of comparison in scientific research: essence, features of application.
16. The concept of the principles of dialectics in research
17. Formation of information base of research. Information search.
18. Method of survey (questionnaire): essence, features of application.

19. Categories and law of dialectics, their role in cognition of the real world.
20. Preparation of research results for publication in domestic and foreign publications.
21. Method of expert assessments: essence, features of application ..
22. Laws of nature and laws of science.
23. Organizational aspects of public approbation of research results (thesis, report, presentation).
24. Methods of abstraction, idealization, formalization: essence, features of the application.
25. The concept of empirical and theoretical levels of research.
26. Systematization of research results: types, content.
27. Methods of analysis and synthesis, induction and deduction: essence, features of the application.
28. Formation of scientific theory - the main stage in the process of scientific research
29. Documenting the implementation of scientific results (participation in the implementation of research topics, work with business structures).
30. Methods of mathematical modeling: essence, features of application.
31. Patterns and trends in science.
32. Implementation of the results of completed research.
33. Methods of grouping in the study: the essence, features of application ..
34. Subject and object of scientific research.
35. Preparation of the results of the qualification research for submission to the public defense.
36. Methods of correlation analysis: essence, features of application ..
37. The concept of method, methodology and levels of research.
38. Classification of research methods, justification of their choice.

39. Methods of factor analysis: essence, features of application ..
40. Dialectics as a system of principles, laws and categories in research.
41. Organization of the applicant's work with reviewers, experts, opponents.
42. Methods of empirical research: essence, features of the application.
43. Types and rules of evidence in the process of scientific knowledge.
44. Presentation of research results; forms and information technologies.
45. Method of cluster analysis: essence, features of application.
46. Modern content and functions of science. Science as a result and a special kind of human cognitive activity.
47. Preparation of a report and presentation of scientific results.
48. Program-target research method: essence, features of application.
49. Patterns and trends in domestic and foreign science.
50. Participation of the applicant in the scientific discussion; communication in the scientific environment.
51. The concept of refutation and its logical structure.
52. Documenting the course of public defense of research. Plagiarism testing and research integrity.
53. Research methodology: concept, structure.
54. Organizational forms of international scientific cooperation.
55. Method of ranking, scaling: essence, features of application.
56. Information technology and research tools.
57. Method of DEA-analysis: essence, features of application..
58. Organizational structures for scientific work in Ukraine.
59. Empirical and theoretical levels of knowledge in research technology.
60. Implementation of analytical review and technology of preparation of scientific publications.

THE STRUCTURE OF THE TASKS OF PROFESSIONAL TESTING AND EVALUATION CRITERIA

The examination ticket for the entrance exam on the Fundamentals of Scientific Research consists of four theoretical tasks, according to the Program of the test for admission to graduate school at Sumy National Agrarian University.

The test is conducted in writing, during which the entrant provides answers that are evaluated in points (maximum number - 200 points, minimum number of credits - 100 points). Each correct answer to a single question is worth 50 points.

Grades (marks)			Criteria for assessing knowledge
1	2	3	4
A «Excellent»	Excellent	90-100%	The graduate student showed comprehensive, systematic and deep knowledge of the educational material provided by the program; mastered the literature recommended by the program; showed creative abilities in understanding, logical, concise and clear interpretation of educational material; mastered the relationship of basic concepts of the discipline, their significance for further professional activity.
B «Very Good»	Very Good	82-89%	The graduate student showed systematic and deep knowledge of the educational material of the discipline above the average level; demonstrated the ability to freely perform the tasks provided by the program; mastered the literature recommended by the program; mastered the relationship of basic concepts of the discipline, their importance for further professional activity.
C «Good»	Good	75-81%	The graduate student showed generally good knowledge of the academic material of the discipline in performing the tasks provided by the program, but made a number of notable mistakes; mastered the basic literature recommended by the program; showed the systematic nature of knowledge of the discipline; capable of independent use and replenishment of acquired knowledge in the process of further educational work and

			professional activities.
D «Satisfactory»	Satisfactory	68-74%	The graduate student showed knowledge of the educational material of the discipline to the extent necessary for further study and future professional activity; coped with the tasks provided by the program; get acquainted with the main literature recommended by the program; made a significant number of errors or shortcomings in the answers to questions during interviews, testing and tasks, etc., the principles of which can be eliminated independently.
E «Sufficient»	Sufficient»	60-67%	The graduate student showed knowledge of the basic educational material of the discipline in the minimum amount necessary for further study and future professional activity; mainly performed the tasks provided by the program; get acquainted with the literature recommended by the program; made mistakes in answering questions during interviews, testing and tasks, etc., which can be eliminated only under the guidance and with the help of a teacher.
FX «Unsatisfactory»	Unsatisfactory	45-59%	The entrant to graduate school has significant gaps in knowledge of the basic educational material of the discipline; made fundamental mistakes in performing the exercises provided by the program.
F «Fail»	Fail	0-44%	The graduate student did not have knowledge of much of the study material; made fundamental mistakes in performing most of the tasks; unable to master the program material on their own.

READINGS

- Yogesh Kumar Singh (2006). *Fundamental of research methodology and statistic*. New Age International. Retrieved from: <https://mfs.mkcl.org/images/ebook/Fundamental%20of%20Research%20Methodology%20and%20Statistics%20by%20Yogesh%20Kumar%20Singh.pdf>
- Ranjit Kumar (2020). *Research Methodology: A Step-by-Step Guide for Beginners. 4th Edition*. Retrieved from : <https://study.sagepub.com/kumar4e>
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