(Ф 03.02 – 110)

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
NATIONAL AVIATION UNIVERSITY
Faculty of Transport, Management and Logistics
Logistics Department

AGREED
Dean of the Faculty of Transport,
Management and Logistics

Tetyana MOSTENSKA
«18» 05 2023

APPROVED
Vice-Rector for Academics

Anatoliy POLUKHIN
«29» 03 2023

Quality Management System
COURSE TRAINING PROGRAM
on
"Methodology of Applied Researches in Logistics"

Educational Professional Program: "Logistics"

Field of study: 07 «Management and Administration»
Specialty: 073 «Management»

Mode of study	Seme-ster	Total (hours/ ECTS credits)	Lectures	Practi-cals	Self-study	HW/ CGP/C	TP/C Pr	Form of semester control
Full-time	2	120/4,0	18	18	84	1 HW – 2 s.	-	Graded Test 2s.

Index: CM-7-073-3/21- 2.1.6

The Course Training Program on "Methodology of Applied Researches in Logistics" is developed on the basis of the Educational Professional Program "Logistics", Master Curriculum №СМ-7-073-3/21 and Master Extended Curriculum № ECM-7-073-3/22 for Specialty 073 "Management" and corresponding normative documents.

Developed by:

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Discussed and approved by the Graduate Department for Specialty 073 "Management", Educational Professional Program "Logistics" – Logistics Department, Minutes № 1 of 06.02.2023.

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INTRODUCTION

The Course Training Program on "Methodology of Applied Researches in Logistics" is developed based on the "Methodical guidance for the subject Course Training Program", approved by the order № 249/од, of 29.04.2021 and corresponding normative documents.

1. EXPLANATORY NOTES

1.1. Place, objectives, tasks of the subject

The place of this subject in the system of professional training is determined by the need for future specialists to develop systemic and critical thinking, professional competencies and practical skills in conducting scientific research in the field of professional activity, i.e. related to the general theory of logistics, optimization of logistics systems and the logistics services market. This subject is the theoretical and practical basis of the set of knowledge and skills that form the profile of a specialist in the field of management and administration.

The aim of the subject is the formation of future specialists in theoretical knowledge and practical skills in the methodology of scientific research in the field of logistics, optimization of logistics systems and the market of logistics services, methodical support of research work and preparation for the execution of master's research.

The tasks of studying the academic subject are:

– acquisition of theoretical knowledge of the principles, methods, structure and technology of theoretical and experimental scientific research;

– mastering the methodological tools of theoretical and empirical scientific research in the field of logistics, their information support;

– acquisition of the skills of justifying the choice of research areas in economics, management and logistics, taking into account logistics concepts;

– mastering the skills of working with literary scientific sources and forming a bibliography in general, and specialized scientific publications in the field of logistics;

– mastering the skills of organizing the research process for the successful completion of the master's research and the solution of urgent logistical problems;

– acquiring the skills of publicizing the results and calculating the effectiveness of scientific research, publishing scientific theses and preparing scientific reports.

1.2. Learning outcomes, the subject makes it possible to achieve

As a result of the study of the subject, the student must achieve the following **learning outcomes:**

- PLO1. To critically comprehend, select and use the necessary scientific, methodological and analytical tools for management in unpredictable conditions.

- PLO7. Organize and carry out effective communication within the team, with representatives of different professional groups and in the international

context.

- PLO17. Use methodological tools of business intelligence in making management decisions.
- PLO18. Use specialized conceptual knowledge that is the basis for original thinking and innovation, in particular in the context of research.
- PLO19. To be able to use methodological tools to justify strategic decisions on the management of logistics business processes and the formation of perfect supply chains.

1.3. Competencies the subject makes it possible to acquire

As a result of studying the discipline the student must acquire the following **competencies**:

– IC1. Ability to solve complex tasks and problems in the field of logistics business process management or in the learning process that involves research and/or innovation and is characterized by uncertainty of conditions and requirements.

– GC1. Ability to conduct research at the appropriate level.

– GC2. Ability to communicate with representatives of other professional groups of different levels (with experts from other fields of knowledge / types of economic activity).

– GC6. Ability to generate new ideas (creativity).

– GC8. Ability to formulate conclusions and recommendations based on the results of research, to calculate the effectiveness of research.

– PC3. Ability to self-development, lifelong learning and effective self-management.

1.4. Interdisciplinary connections

The subject "Methodology of Applied Researches in Logistics" is based on knowledge from such subjects as "Business Analysis and Data Processing", "Logistics Management", is supplemented with knowledge from such subjects as "Risk Management in Logistics" and is a methodological basis for completing pre-diploma Practice and performance of Qualification Paper.

2. COURSE TRAINING PROGRAM ON THE SUBJECT

2.1. The subject content

Training material is structured according to the module principle and consists of one educational module, namely:

- educational **module No. 1 "Methodological basis and organization of master's research"**, which is a logically complete, relatively independent, integral part of the curriculum, learning of which provides for module test and analysis of its implementation.

2.2. Modular structuring and integrated requirements for each module

Module 1. "Methodological basis and organization of master's research"

Integrated requirements of module #1.

As a result of studying the first module of the academic subject, the student should:

Know:

- peculiarities of scientific activity and the process of scientific knowledge;
- the classification of sciences and the place of logistics in the system of applied sciences;
- the essence and components of scientific research methodology;
- methods of theoretical and empirical research;
- information provision of scientific research in the field of logistics;
- stages of planning and execution of master's scientific research;
- forms of publication and implementation of the results of scientific research;
- procedures for examination and evaluation of the effectiveness of scientific research.

Learning outcomes:

– determine and justify the relevance, object and subject, methodology of conducting scientific research in the field of logistics, choose methods and carry out computational experiments;

– to possess the methods and technology of scientific research and collection of scientific information, its analysis and compilation of a bibliography;

– adhere to the code of academic integrity, master the techniques of correct citation of scientific literature and the preparation of a critical review of scientific sources;

– to carry out scientific research in the field of logistics, to plan the scientific research process and to acquire the skills necessary for the successful completion of the master's qualification work;

– carry out approbation of the results of scientific research in the form of scientific publications and public scientific discussions;

– to plan the processes of implementation and examination of the results of scientific research;

– generate innovative approaches to solving applied scientific problems and determine the scientific novelty of the obtained results of scientific research in the field of logistics.

Topic 1. Science as a sphere of human activity and a system of knowledge. Logistics as a field of applied science.

The essence, purpose, meaning of science. Science as a result and a special type of cognitive activity. Scientific activity and its types. Evolution of science. Modern philosophy of science.

Theoretical and methodological principles of science. The essence and features of the process of scientific knowledge. Categories, principles, theories,

paradigms and methods as content components of scientific research methodology. Terminological analysis of scientific concepts. The main structural elements of science: principles (postulates), simple abstraction (concepts, definitions), categories, axioms, regularities, laws. Scientific hypothesis.

Basic methods of scientific generalizations. General scientific and specific scientific methods of scientific knowledge.

The problem of non-scientific knowledge. Understanding the relationship between scientific and social values as a condition for the modern development of science.

Classification of sciences. Fundamental and applied sciences. Economic science as a separate branch of science. Features of economic research. A new stage in the development of the global economy as a knowledge economy.

Logistics as an applied science. Paradigm and concepts of logistics. Separation of supply chain management into a separate branch of science. Research directions in logistics and supply chain management.

Topic 2. Basic elements of scientific research methodology. The object and subject of scientific research of masters of the EPP "Logistics"

The subject of the methodology of science. The concept of empirical and theoretical levels of scientific research. Concepts and basic characteristics of scientific research methods. Typology of methods of scientific knowledge: philosophical, general scientific, empirical and theoretical. Classification of scientific research methods. Correlation of methodology and research methods.

Basic elements of scientific research methodology. Statement of the problem, definition of the research topic, the goal and objectives of the research. Actuality of theme. Scientific novelty. Practical significance of the work, analysis of interested organizations and individuals in the field of logistics and supply chain management.

Scientific research procedure. Peculiarities of the structure of scientific research, its object, purpose, tasks, basic forms. Peculiarities of formulating management problems and research problems. The object and subject of scientific research, the ambiguity of their interpretation.

Requirements for scientific research. Criteria of scientific research. Scientific result and its forms. The role of the experiment in scientific research. Features of economic experiments.

Analysis of the problems of logistics activity in Ukraine and the possibilities of their scientific research. The object and subject of scientific studies of the masters of the EPP "Logistics".

Topic 3. Theoretical research: principles, regularities and modern methods. Principles and regularities of the development of logistics as a scientific theory.

Purpose and features of theoretical research. Theory as a result of theoretical

research. Peculiarities of logical and chronological approaches when conducting theoretical research. Purpose, cases and requirements for the use of these methods in conducting scientific research.

Typology of generally theoretical research methods (analysis, synthesis, induction, deduction, modeling, design, forecasting, systematization, qualification, thought experiment). Formalization as a special method of theoretical thinking. Axiomatic method. Types of hypotheses.

The main tasks and stages of theoretical research in logistics and supply chain management. Principles and regularities of the development of logistics as a scientific theory. The laws of logistics and their practical significance.

Topic 4. The systematic method of research in logistics and patterns of development of logistics systems

Development of a systematic research method. System method. System approach and system analysis. Categories of the system approach. Control systems: controlled and controlling subsystems. Self-organization of systems and synergy. Synergistic analysis of complex systems.

Methodology of research of complex systems. Specificity of the system method and classification of systems. Modern methods of mathematical description of complex systems (phase space, chaos theory, attractors, fractals).

Theory of logistics systems. Principles of construction and patterns of development of logistics systems at the micro, meso, and macro levels. Sources of synergistic effect in logistics systems.

Modeling as a way of learning logistics systems. Methods of formalized representation of systems. Computer simulation. Computerized decision-making systems in logistics.

Topic 5. Empirical methods of logistics activity research

Empirical methods: measurement, comparison, generalization. The size of the unit of measurement. Dynamic error. Measurement method. The principle of measurement. Measurement information. Comparison. Generalization. Requirements for comparison. Types of comparisons.

Experiment. Long-term, short-term, continuous, discrete observation. Specificity of the experiment. Stages of the experiment.

Other empirical research methods: survey, survey-interview, questionnaire survey, conversation, rating, expert evaluation, method of collective expert evaluations, method of "brainstorming", morphological method of analysis, method of sevenfold search, method of associations and analogies, method of collective notebook and control questions, a morphological box.

Toolkit for data processing of empirical research. Completeness, homogeneity, comparability, accuracy and reliability of facts, their critical assessment, ranking. Approximation of the results of experimental studies. Heuristic methods.

Topic 6. Information provision of scientific research in the field of logistics

Characteristics of the concept of "information". Elements of research activities in relation to the collection, processing and storage of information. Information quality criteria. Multifaceted information of economic research. Information carriers, primary and secondary scientific documents. The essence and types of scientific and technical information. Information space of a scientist. Scientometric databases of publications. Impact factor.

Information resources and technologies in scientific research. Characteristics and classification of scientific literary sources. Basic principles of information collection. Methods of searching and collecting scientific information. Automated information retrieval systems. Electronic search of scientific information.

Selection and accumulation of scientific information. Analysis and interpretation of information. Organization of work with scientific literature. Theory and practice of dynamic reading and rational work with scientific literature. Peculiarities of compiling a bibliography.

Incorrect use of scientific literary sources. Signs of plagiarism and prevention of text matches.

Topic 7. Scientific thinking of logistics specialists and organization of master's research

The essence and features of scientific thinking. Norms of professional thinking of a research scientist. Style of scientific thinking. Problems and stages of formation of scientific thinking. Obstacles to creative thinking. Discussion as a form of scientific communication. Strategy and tactics of controversy. Ways of argumentation in a scientific discussion.

Scientific thinking of a logistics specialist. Scientific thinking of masters in logistics and supply chain management. Intellectual capital and its features in logistics activity. Knowledge management in logistics systems.

Organization of scientific research works of students. Master's thesis as a result of scientific research. Development of a scientific research plan at the level of a master's thesis. Work stages, work schedule. Preliminary and final plan of scientific research, plan-prospectus of scientific research.

Scientific supervision of the master's scientific work. The role and responsibility of the scientific supervisor.

Coordination of the master's research plan and methodology with the scientific supervisor and the procedure for its approval. Development of a calendar plan and a plan for the implementation of the results of the master's research.

Topic 8. Publication of the results of scientific research and scientific reporting

Systematization of research results. Evidence, hypotheses, conclusions and recommendations, scientific experiment, literature review of research.

Presentation of conclusions and recommendations in the form of an abstract, a

scientific article, theses of a report, a report on the performed research work. Types of essays: scientific, informative. Oral transmission of information about scientific results. Report, message at meetings, seminars, symposia, conferences. Conversations during personal meetings.

The essence and role of publications in scientific research. Types of scientific publications: scientific monograph, scientific article, theses of a scientific report (message), scientific report (message).

Stages of preparation of scientific publications. Plan-prospectus of a scientific article. Formulation of the problem and determination of relevance. Justification of the research methodology. Requirements for the main text. Formulation of conclusions and determination of the direction of further research. Bibliographic references. Work on the manuscript. Literary editing.

Requirements for the design of scientific publications in the field of logistics. Specialized scientific publications in the field of economics, management and logistics. Comparative analysis of requirements for the structure and content of scientific publications.

Topic 9. Implementation of the results of scientific research and evaluation of their effectiveness

Scientific production and its features in the field of logistics. Examples of scientific products at the micro and macro levels. Scientific results and forms of scientific innovation. Types of scientific production: theoretical and scientific-methodological provisions, methods, recommendations, instructions.

The procedure for implementing the results of the NDR in the practical activities of enterprises. Forms of implementation of the results of master's research in the field of logistics. Drawing up acts and certificates of practical value. Using the results of scientific research in the educational process to improve the quality of professional training of masters in logistics.

The effectiveness of the results of scientific research and its criteria. Economic, scientific and technical, social efficiency. Calculation of the economic efficiency of scientific research. Principles of green logistics and ecological efficiency of scientific developments from the point of view of implementation of green logistics solutions.

Topic 10. Examination of scientific research and preparation for the defense of a master's thesis.

Scientific expertise and its role in evaluating the results of scientific research. Functions and powers of logistics experts.

Review of research work, its content and compilation method. The procedure for reviewing master's theses. External and internal review. Feedback on research work, its content and method of compilation.

Preparation for the defense of master's theses under the educational and professional program "Logistics". Public defense of the master's thesis: the content

of the procedure and the procedure for implementation. Preparation of handouts. Recommendations for the structure and content of the speech in defense of the master's thesis.

2.3. Training schedule of the subject

№	Theme (thematic section)	Total, hour			
		Total	Lectures	Practicals	Self- study
1	2	3	4	5	6
Module No. 1 " Methodological basis and organization of master's research "					
2 semester					
1	Science as a sphere of human activity and a system of knowledge. Logistics as a field of applied science.	10	2	2	6
2	Basic elements of scientific research methodology. The object and subject of scientific research of masters of the EPP "Logistics"	10	2	2	6
3	Theoretical research: principles, regularities and modern methods. Principles and regularities of the development of logistics as a scientific theory.	10	2	2	6
4	A systematic method of research in logistics and patterns of development of logistics systems	10	2	2	6
5	Empirical methods of logistics research	12	2	2	8
6	Information support for scientific research in the field of logistics	10	2	2	6
7	Scientific thinking of logistics specialists and organization of master's research. Publication of the results of scientific research and scientific reporting.	20	2	2	16
8	Implementation of the results of scientific research and evaluation of their effectiveness	24	2	2	8
	Examination of scientific research and preparation for the defense of a master's thesis			2	10
9	Homework	8	-	-	8
10	Module Test 1	6	2	-	4
Total by the module №1		**120**	**18**	**18**	**84**
Total by the subject		**120**	**18**	**18**	**84**

2.4. Homework

In the second semester, students, in accordance with the methodological recommendations approved in the established order, perform homework (HW), which consists in choosing a specific scientific problem from the general theory of logistics or the task of optimizing the parameters of the operation of logistics systems and conducting a scientific study using scientific methods.

Homework is performed with the aim of consolidating, systematizing, generalizing and deepening knowledge of the methodology of applied scientific research, developing the skills of independent creative work in the process of performing theoretical and experimental research and in the preparation of a master's qualification thesis, forming the ability to search for innovative logistical solutions and acquiring practical planning skills and the implementation of individualized scientific research and the solution of applied logistics problems, as well as the formation of the readiness of higher education seekers for independent research activities in the conditions of the knowledge economy.

In order to successfully perform the HW, the student must know logistics terminology and the general theory of logistics as an applied science, principles and methods of scientific research; to be able to use tabular and graphic methods for summarizing and systematizing a large array of theoretical information on the organization and design of logistics systems; to be able to apply methodological tools for solving scientific problems in the field of logistics; to be able to work with scientific literature and form a bibliography, adhering to the principles of academic integrity; to search for innovative solutions to non-standard logistics problems and to form a methodology for conducting master's scientific research.

Assignments for homework are developed by leading teachers of the department and approved by the minutes of the meeting of the graduation department, brought to the attention of the student individually and performed in accordance with methodical recommendations.

The time required for carrying out homework is 8 hours of self-study.

3. BASIC CONSEPTS OF GUIDANCE ON THE SUBJECT

3.1. Teaching methods

When studying an academic discipline, a student-centered approach to learning, a problem-oriented teaching style and interactive learning methods (group work method, discussions, role-playing games, case method, portfolio method, project method) are used, which contribute to the development of cognitive, creative and research activities of students.

The implementation of these methods is carried out during lectures, during the independent work of the applicants with educational literature, when the applicants perform team and individual tasks, prepare and defend presentations, solve problems independently and solve practical situations as a team, which allows the applicants to master the methodology and modern technologies of logistics justification of effective management decisions.

3.2. List of references (basic and additional)

Basic literature

3.2.1. Bairagi V., Munot M. V. (ed.). Research methodology: A practical and scientific approach. – CRC Press, 2019.

3.2.2. Thomas C. G. Research methodology and scientific writing. – Thrissur: Springer, 2021.

3.2.3. Gonzalez-Feliu, J., Chong, M., Vargas Florez, J., & Padilla Solis, J. (Eds.). (2019). Handbook of Research on Urban and Humanitarian Logistics. IGI Global.

3.2.4. Ladanyuk A.P., Vlasenko L.O., Kishenko V.D. Methodology of scientific research: study guide — Kyiv: Lira-K, 2020. — 352 p.

3.2.5. Säfsten K., Gustavsson M. Research methodology: for engineers and other problem-solvers. – 2020.

Additional literature:

3.2.6. Boon M. Scientific methodology in the engineering sciences //The Routledge handbook of the philosophy of engineering. – 2020. – С. 80-94.

3.2.7. Makogon B. V. et al. Legal form of action: the issues of content and methodology. – 2019.

3.2.8. Sayfullayeva D. A. et al. Methodology of using innovative technologies in technical institutions //Annals of the Romanian Society for Cell Biology. – 2021. – С. 7505–7522-7505–7522.

3.2.9. Zokhidov A. A. Methodology of Scientific Research: The Algorithm for the Formation of the Problem and the Stages of its Study //American Journal of Social and Humanitarian Research. – 2022. – Т. 3. – №. 11. – С. 380-384.

3.3. Internet resource

3.3.1. Legislation of Ukraine - [Electronic resource]. - Access mode: https://zakon.rada.gov.ua/laws.

3.3.2. Cabinet of Ministers of Ukraine. - [Electronic resource]. - Access mode: https://www.kmu.gov.ua/ua

3.3.3. Ministry of Infrastructure of Ukraine. - [Electronic resource]. - Access mode: https://mtu.gov.ua/

3.3.4. Vernadsky National Library. - [Electronic resource]. - Access mode: http://www.nbuv.gov.ua/

3.3.5. Scientific Library of the National Academy of Sciences of Ukraine: http://www.lib.nau.edu.ua/booksfornau.

4. RATING SYSTEM OF KNOWLEDGE AND SKILLS ASSESSMENT

4.1. Assessment of certain kinds of student academic activities is carried out in accordance with table 4.1.

Table 4.1

Kind of academic activities	Max grade
1 semester	
Module 1 Methodological basis and organization of master's research	
Carrying out practical tasks and analysis of cases	50 (summary)
Carrying out and defence of homework	20
For carrying out module test №1, a student must receive not less than	*42*
Carrying out Module Test №1	30
Total by the Module №1	**100**
Total by the subject	**100**

The Graded Test Grade *is determined (in grades and on a national scale) based on the results of all kinds of academic activities during the semester.*

4.2. A student gets a credit for the completed assignment if the student's performance has been assessed positively.

4.3. The total of Grades for individual academic activities completed by a student constitutes a Current Semester Module Grade, which is entered into the Module Control Register.

4.4. The final semester rating is converted into a grade on the national scale and the ECTS scale.

4.5. The Graded Test Grade is entered in an Examination Register, a student's record book and academic card, e.g.: ***92/Ex/A, 87/Good/B, 79/Good/C, 68/Sat/D, 65/Sat./E***, etc.

4.6. The Total Grade on the subject corresponds to the Graded Test Grade.

The Total Grade on the subject is entered into Diploma Supplement.

(Ф 03.02 – 01)

АРКУШ ПОШИРЕННЯ ДОКУМЕНТА

№ прим.	Куди передано (підрозділ)	Дата видачі	П.І.Б. отримувача	Підпис отримувача	Примітки
	УМСФ	29.03.23	Шишкіна		

(Ф 03.02 – 02)

АРКУШ ОЗНАЙОМЛЕННЯ З ДОКУМЕНТОМ

№ пор.	Прізвище ім'я по-батькові	Підпис ознайомленої особи	Дата ознайом-лення	Примітки

(Ф 03.02 – 04)

АРКУШ РЕЄСТРАЦІЇ РЕВІЗІЇ

№ пор.	Прізвище ім'я по-батькові	Дата ревізії	Підпис	Висновок щодо адекватності

(Ф 03.02 – 03)

АРКУШ ОБЛІКУ ЗМІН

№ зміни	№ листа (сторінки)				Підпис особи, яка внесла зміну	Дата внесення зміни	Дата введення зміни
	Зміненого	Заміненого	Нового	Анульо-ваного			

(Ф 03.02 – 32)

УЗГОДЖЕННЯ ЗМІН

	Підпис	Ініціали, прізвище	Посада	Дата
Розробник				
Узгоджено				
Узгоджено				
Узгоджено				