Ministry of Education and Science of Ukraine
State Higher Educational Institution
National Mining University

Department of System Analysis and Management

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WORKING PROGRAM OF EDUCATIONAL DISCIPLINE
"Basics of logistics"
For masters of specialty 124 "System Analysis"

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CONTENT

INTRODUCTION

The programmed results of the master's degree in system analysis are defined in the standard of higher education by specialty 124 System Analysis.

In the educational-professional program of the State Higher Educational Institution "NMU" [2.1] the distribution of programmatic learning outcomes was carried out according to the organizational forms of the educational process. The discipline "Fundamentals of Logistics" includes the following professional competencies:

ФК1 – Ability to develop and analyze mathematical models of natural, technological, economic and social objects and processes;

ФК10 – Ability to use modern information technologies in solving problems of system analysis;

During the study of the discipline, the Master must learn the following professional learning outcomes:

ПРН1 – To know and be able to apply in practice methods of system analysis, methods of mathematical and information modeling for constructing and researching models of objects and processes of informatization;

ПРН 2 – To know the methods of uncovering uncertainties in the tasks of system analysis, to be able to reveal situational uncertainties, and uncertainties in the problems of interaction, counteraction and conflict of strategies, to find a compromise in the disclosure of conceptual uncertainty, etc .;

ПРН 4 – Know and be able to apply risk measures, evaluate and use them in the analysis of multi-factor risks of accidents and disasters.

ПРН 6 – Know and be able to apply evolutionary modeling and genetic optimization methods, inductive modeling techniques, and mathematical apparatus for fuzzy logic, neural networks, game theory and distributed artificial intelligence, etc.

ПРН 7 – Be able to develop expert and advisory systems in conditions of poorly structured data of different nature.

ПРН 8 – Know and be able to identify (estimate) the parameters of mathematical models of objects of management in real time in conditions of changes in its dynamics and the effects of random perturbations, using the measured signals of the input and output coordinates of the object.

ПРН 9 – Know and be able to implement highly loaded computing and data processing systems in system analysis and management tasks, and decision support systems.

ПРН 10 – Know models, methods and algorithms for decision making under conflict conditions, fuzzy information, uncertainty and risk.

The purpose of the discipline "Fundamentals of logistics" is to familiarize students with logistics systems and their structure and provide skills for solving typical problems of logistics management in the supply chain, planning and analysis of logistics, finding solutions in conditions of uncertainty, as well as application in the work of system analytics and use in solving typical tasks of activity.

Realization of the goal requires the transformation of the program results of training in discipline, and the selection of the content of the discipline according to this criterion.

Requirements for the structure of the work program of disciplines are given in [2.5].

1 AREAS OF USE

The work program is designed for

• implementation of a competent approach in shaping the structure and content of discipline;

• internal and external quality control of training specialists;

• accreditation of the educational program in the specialty.

The work program sets:

• scope and terms of teaching discipline;

• designation of physical quantities;

• disciplinary learning outcomes and their level of difficulty;

• Thematic plan and volume distribution according to the organizational forms of the educational process;

• Requirements for the structure and content of individual tasks;

• tasks for independent work of the applicant;

• generalized diagnostic tools, criteria and procedures for assessing the achievements of applicants;

• composition of the complex of teaching and methodological provision of discipline.

2 NORMATIVE REFERENCES

The work program of the discipline is developed on the basis of the following normative documents:

2.1 Educational program of masters training in specialty 124 "System analysis" / Ministry of Education and Science of Ukraine, НТУ «Дніпровська політехніка». – Д. : НТУ «ДП», 2018. – 31 с.

2.2 Resolution of the Cabinet of Ministers of Ukraine dated December 30, 2015, No. 1187 Licensing conditions for the educational activities of educational institutions (Decree of the Cabinet of Ministers of Ukraine of December 30, 2015, No. 1187 "Licensing conditions for the educational activities of educational institutions".

2.3 Draft Standard of Higher Education Bachelor Degree Specialty 124 System Analysis.

2.4 Law of Ukraine "On Higher Education".

2.5 Standard of Higher Education of the State Higher Educational Institution "NMU" Design of the educational process. Dnipropetrovsk: NMU, 2016. - 74 p.

3 SCOPE AND TERMS OF STUDY OF THE DISCIPLINE

Total amount - 5 ECTS credits (150 academic hours).

It is taught at the 1st year, in the 2nd semester, in the 3rd (9th week) and the 4th quarter (8 weeks).

4 DETERMINATION OF PHYSICAL QUANTITIES

Commonly used notation is used.

5 EXPECTED DISCIPLINARY LEARNING OUTCOMES

The code and the content of educational outcomes for an educational-professional program	Code and content of disciplinary learning outcomes (DLO)
1	2
ПРН1 – To know and be able to apply in practice methods of system analysis, methods of mathematical and information modeling for constructing and researching models of objects and processes of informatization;	ДРН1-1 Perform analysis of logistic systems and flows passing through them in order to identify "bottlenecks"
	ДРН1-2 Know the methods of mathematical modeling of processes and phenomena that occur in the logistics system.
ПРН 2 – To know the methods of uncovering uncertainties in the tasks of system analysis, to be able to reveal situational uncertainties, and uncertainties in the problems of interaction, counteraction and conflict of strategies, to find a compromise when disclosing conceptual uncertainty, etc.	ДРН2-1 Investigate logistics systems to identify conflict and conflict strategies in logistics chains.
	ДРН2-2 Know the methods of economic analysis of logistics systems for resolving conflicts of development strategies
	ДРН2-3 Know the classic strategies of finding a compromise in mass service systems
ПРН 4 – Know and be able to apply risk measures, evaluate and use them in the analysis of multi-factor risks of accidents and disasters.	ДРН4-1 Have skills in risk assessment in logistics systems
	ДРН4-2 Carry out an assessment of multifactorial risks in the study of logistics systems processes
ПРН 6 – Know and be able to apply evolutionary modeling and genetic optimization methods, inductive modeling techniques, and mathematical apparatus for fuzzy logic, neural networks, game theory and distributed artificial intelligence, etc.	ДРН6-1 Know the modern methods of evolutionary modeling and optimization in terms of application to solve problems in logistics
	ДРН6-2 Be able to apply mathematical apparatus of fuzzy logic in decision making tasks in the study of logistic systems
ПРН 7 – Be able to develop expert and advisory systems in conditions of poorly structured data of different nature.	ДРН7-1 Know the basic principles of developing expert and advisory systems for improving the efficiency of logistics systems
	ДРН7-2 Know the approaches and methods for processing poorly structured data of different nature.

ПРН 8 – Know and be able to identify (estimate) the parameters of mathematical models of objects of management in real time in conditions of changes in its dynamics and the effects of random perturbations, using the measured signals of the input and output coordinates of the object.	ДРН8-1 Know the methods and approaches to identifying the parameters of logistics systems and their components in real time.
	ДРН8-2 Know the strategies for eliminating the negative impact of random disturbances on different chains of the logistics system.
ПРН 9 – Know and be able to implement highly loaded computing and data processing systems in system analysis and management tasks, and decision support systems.	ДРН9-1 Know and be able to implement highly loaded computing systems in supply chains
	ДРН9-2 Know the advantages of modern data processing tools and choose the right ones to improve the efficiency of the logistics system
ПРН 10 – Know models, methods and algorithms for decision making under conflict conditions, fuzzy information, uncertainty and risk.	ДРН10-1 Know models, methods and algorithms for decision making under conditions of conflict and uncertainty
	ДРН10-2 To be able to apply methods and algorithms for decision-making under risk conditions in logistics systems.

6 THEMATIC PLAN AND DISTRIBUTION OF DISCIPLINES BY TYPES OF EDUCATIONAL STUDIES

DLO code	**Kind and theme of training sessions**	**Amount, hours**		
		Lect. hall	**CPC**	**all**
1	**2**	**3**	**4**	**5**
	lections	**38**	**62**	**100**
ДРН1-2	1. Conceptual foundations of logistics. Origin of the term and history of logistics. Modern definition of logistics. Causes and trends of logistics development. The purpose and tasks of logistics. Logistics and modern requirements of the economy ..	4	8	8
ДРН1-1,2	2. Methodological unit of logistics. The basics of modern logistics concept. System approach as a methodological base of logistics. Logistic systems and their elements. Classification and structuring of logistic systems. Tools for formalization and decision making in logistics systems.	4	4	8

ДРН1-2 ДРН2-3	3. Methods of planning and managing production and economic systems. Material, Material, and Necessity Planning (MRP). Short-term planning tactics.	2	4	6
ДРН1-1 ДРН7-2	4. Methods of system analysis and modeling of logistic systems. General description of methods for solving logistic problems. Methods of system analysis. Models of logistic systems.	2	4	6
ДРН2-2	5. Communication of logistics with the main functional areas of business. Logistic mission and environment. Place of logistics management in the firm. Interface logistics management with marketing. Interaction of logistics with other business activities.	4	6	10
ДРН7-1 ДРН4-1	6 Order Management. Management objectives and components of the order cycle. Processing and execution of orders.	4	4	8
ДРН10-1 ДРН2-2	7. Purchasing management. Goals and objectives of logistics procurement management. Choice of supplier and rational decisions in the management of purchases.	2	3	5
ДРН4-2 ДРН8-2	8. Industrial logistics. Modern production and logistics. Development of micro-logistic concepts and systems in production. Logistic management in production.	2	4	6
ДРН8-1	9. Distribution and physical distribution of goods. Distribution channels and networks. Physical distribution.	2	4	6
ДРН4-1 ДРН10-2	10. Inventory management. Types of stocks. Tasks and costs of formation and maintenance of stocks. Inventory management options. Strategies for control and inventory management.	4	6	10
ДРН2-3	11. Transport logistics. Comparative logistics characteristics of different types of transport. Alternatives to transportation and selection criteria for logistics intermediaries.	2	5	7
ДРН6-1 ДРН9-2	12. Warehouse logistics. Functions and tasks of the warehouses in the logistic system. Logistics process in stock.	2	5	7
ДРН8-1 ДРН9-2 ДРН7-2	13. Information provision of the logistics process. Information flows in logistics. Logistic information systems.	2	5	7
ДРН9-1 ДРН8-2	14. Logistic administration. Organizational aspects of logistics management. Analysis, control and audit.	2	4	6
	Laboratory works	**34**	**41**	**75**
ДРН2-2	1. CHOICE OF TRANSPORTATION OF OIL PRODUCTS.	2	2	4
ДРН4-1 ДРН7-2	2. CONTROL IN THE FIELD OF PURCHASING ACTIVITY AND APPROVAL OF THE PLACE OF ORDERS DECISION	2	4	6

ДРН2-2 ДРН10-2	3. APPROVAL OF THE DECISION ON USE OF THE SERVICE OF THE WRITTEN DEPARTMENT	2	4	6
ДРН6-1 ДРН6-3	4. DETERMINATION OF LOCATION OF DISTRIBUTION COMPLEX IN THE SERVICE TERRITORY	3	4	7
ДРН2-3	5. PLANNING REQUIREMENTS IN MATERIALS	2	2	4
ДРН9-1 ДРН10-1	6. CONTROL BY STORES WITH APPLICATION ABC AND XYZ ANALYSIS	4	5	9
ДРН1-2 ДРН2-2	7. CALCULATION OF THE POINT OF SAFETY OF ACTIVITY OF THE COMPOSITION	2	5	7
ДРН10-1	8. PLACEMENT OF GOODS IN THE COMPOSITION.	2	5	7
	Alltogether	**57**	**93**	**150**
	Lections (classroom - 2 hours a week)	**34**	**62**	**100**
	Laboratory classes (classroom - 1 hour per week)	**19**	**31**	**50**
	Final (semester) control -exam: **II semester, 4 quarter**			

7 REQUIREMENTS FOR INDIVIDUAL TASK

In studying the discipline of the individual task is not provided.

8 TASK FOR THE STUDENT'S SELF-EMPLOYED WORK

The main tasks for independent work include:

- preliminary processing of information provision for each topic;
- preparation for ongoing control - solving tasks of self-control on each topic;
- preparation for the final (semester) control.

9 FORM OF FINAL CONTROL, DIAGNOSTICS, CRITERIA AND EVALUATION PROCEDURE

9.1 Form of final control

Form of final control - exam.

An assessment of the level of the formation of disciplinary competencies in the form of examinations can also be carried out without the participation of a student based on the results of current control.

9.2 Forms of current control

Determination of the level of the formation of disciplinary learning outcomes during the current control is carried out for:

- • a certain section of the work program of discipline;
- • laboratory work (inspection and protection);

9.3 Diagnostic tools

9.3.1 Generalized diagnostic tools

Diagnostic tools are presented in the form of theoretical questions and concretized tasks with numerical input data and are designed to assess the student's ability:
- differentiate, integrate and unify knowledge;
- apply rules, methods, principles, laws in specific situations;
- interpret circuits, graphs, diagrams;
- analyze and evaluate the facts, events and predict the expected results from the decisions made;
- to present material on paper Logically, consistently, with the requirements of the current standards.

9.3.2 Specified diagnostic tools

The precise diagnostic tools that are directly used for control measures during lectures are formed on the basis of generalized numerical or other concretization of generalized means in the form of closed and open type tests.

9.4 Criteria and evaluation procedures

9.4.1 Lecture material

The evaluation of the results of the accomplished tasks is carried out by comparing them with the standards - samples of correct and complete answers by identifying the level of the formation of competencies based on the analysis of the student's response, using the coefficient of assimilation as a percentage that adapts the value of the assessment to the ECTS scale:

$$P_i = a / m \ (\%),$$

where a is the number of correct answers or performed essential operations of decision standards; m is the total number of questions or essential operations of the decision benchmark.

The results of the students' achievements (as a percentage) obtained from the described scheme are presented in the estimations of the ECTS and the national scale:

Marks, %	Grade
National Differentiated Scale	
90-100	Excellent

74-89	Good
60–73	Satisfactory
1-59	Fail
Scale ECTS	
90-100	A
82-89	B
74-81	C
64–73	D
60–63	E
35-59	Fx
1-34	F

If the level of student achievement below 60% is fixed or if the student does not appear on a control event, then he is rated "Fx" and "unsatisfactory". In such cases, the student is obliged to further master this topic of classes and undergo a re-evaluation of his learning outcomes.

9.4.2 Laboratory work

Each laboratory work is evaluated by the quality of the report by means of the coefficient of assimilation or by the expert method, when the maximum assessment is made subject to the following conditions:

- compliance with the report on the implementation of laboratory work methodological recommendations;
- correctness of execution
- possession of theoretical knowledge on which the subject of research is based;
- possession of experimental research methods;
- general and professional literacy, conciseness and logical sequence of material presentation;
- compliance of the report with the current standards.
- availability of references to sources of information;
- independence of execution (it turns out during protection).

The level of achievements based on the results of a complex of laboratory work by discipline is defined as the average value of the results of the current control of each.

During the examination, the evaluation for laboratory work is determined by the percentage of the correct steps of the algorithm for its implementation.

Integral evaluation of achievements in all laboratory work is accepted (student achievement level is not less than 60% or at least 60 points) only in the case when all laboratory work provided by the program of the discipline is fulfilled and evaluated.

9.4.3 Integral level of student's achievement in discipline

The integral level of student achievement in the mastering of discipline material as a whole is calculated as the weighted mean of the level of formation of competences in lecture, practical and laboratory classes:

$$IP = \sum_{i=1}^{n} \frac{\left(P_i \times T_i\right)}{T}, \%,$$

where n is the number of types of training sessions;

P_i – level of achievements for the i-th type of occupation,%;

T_i – amount of the i-th type of studies;

T – total volume of discipline.

Achievements of a student in mastering a certain discipline in general can not be evaluated positively if from any planned control measure in this discipline the student has not received a positive assessment.

If the level according to the results of any current control measure is higher than 60%, then the national scale is rated "accounted".

If the level according to the results of any current control measure is lower than 60%, then the discipline is rated "Fx" and, if below 35%, then "F". On the national scale in this case, the "unrecorded" score is displayed.

10 COMPOSITION OF THE COMPLEX OF EDUCATIONAL AND METHODICAL PROVISION OF DISCIPLINE

The complex of teaching and methodological support of the discipline should be located on the site of the Department of System Analysis and Management and should contain:

1) work program of discipline;
2) educational content (information provision of lectures);
3) the task and methodical provision of laboratory work;
4) materials for methodological support of independent work of the student concerning:
- preliminary processing of information provision of lectures;
- solving tasks of self-control on each topic
6) generalized tasks for the current control of the level of the formation of disciplinary competencies in the form of typical situational exercises with examples of solutions .;
7) task for post-certification monitoring of the level of formation of disciplinary competencies.

11 RECOMMENDED BOOKS

11.1 General:

1. Логистика: Учеб. пособие / Под ред. Б.А. Аникина. – М.: ИНФРА-М, 2002. – 368с.

2. Неруш Ю.М. Логистика – 3-е изд. М.: ЮНИТИ-ДАНА, 2003. – 495с.

3. Логистика: Управление в грузовых транспортно-логистических системах: Учеб. пособие / Под ред. Л.Б. Миротина. – М.: Юристь, 2002. – 414с.

4. Транспортная логистика: Учебник для транспортных вузов. / Под общей редакцией Л.Б. Миротина. – М.: Издательство «Экзамен», 2002. – 512с.

5. Основы логистики: Учеб. пособие / Под ред. Л.Б. Миротина и В.И. Сергеева. – М.: ИНФРА-М, 2002. – 200с.

11.2 Additional:

1. Альбеков А.У., Федько В.П., Митько О.А. Логистика коммерции. - Ростов-на-Дону: Феникс, 2001. – 512с.

2. Аникин Б.А., Тяпухин А.П. Коммерческая логистика: Учебник. – М.: ТК Велби, Изд-во «Проспект», 2005. – 432с.

3. Багиев Г.Л., Асаул А.Н. Организация предпринимательской деятельности. Уч. Пособие / Под общ. ред. проф. Г.Л. Багиева. - СПб.: Изд-во СПбГУЭФ, 2001. - 231 с.

4. Бауэрсокс Д. Логистика: интегрированная цепь поставок / Пер. с англ. — М.: ЗАО «Олимп—Бизнес», 2001. - 640 с.

5. Биктимиров Р., Гречишников В., Дырин С., Гумеров А. и др. Управление качеством, персоналом и логистика в машиностроении: Уч. пособие. 2-е изд. – СПб.: Питер, 2005. – 256с.

6. Волгин В.В. Кладовщик: Устройство складов. Складские операции. Управление складом. Нормативные документы. – 3-е изд., перераб. и доп. – М.:Ось-89, 2005. – 336с.

7. Гаджинский А.М. Логистика: Учебник. – М.: ИВЦ «Маркетинг», 1998 - 228с.

8. Гаджинский А.М. Современный склад. Организация, технология, управление и логистика: учебно-практическое пособие. – М.: ТК Велби, Изд-во «Проспект», 2005. – 176с.

9. Горяїнов О.М. Практика вантажних перевезень і логістики: Навчальний посбіник. – Харків: Вид-во «Кортес-2001», 2008. – 323с.

10. Грузовые автомобильные перевозки / Воркут А. И.— 2-е изд., перераб. и доп.— К.: Вища шк., 1986.— 447 с.

11. Дыбская В.В. Управление складом в логистической системе. - М.: КИА центр, 2008. – 110с.

12. Зеваков А.М. Логистика материальных запасов и финансовых активов. – СПб.: Питер, 2005. – 352с.

13. Костоглодов Д.Д., Саввиди И.И., Стаханов В. Н. Маркетинг и логистика фирмы. - М.: Изд-о «ПРИОР», 2000. - 128 с.

14. Крикавський Є., Чухрай Н. Промисловий маркетинг: Підручник. – 2-ге вид. – Львів: Вид-во Національного університету “Львівська політехніка”, 2004. – 472с.

15. Курганов В.М. Логистика. Транспорт и склад в цепи поставок товаров. Учебно-практическое пособие. – М.: Книжный мир. 2005. – 432с.

16. Лукинский В.С. Логистика автомобильного транспорт: концепция, методы, модели / В.С. Лукинский, В.И. Бережной, Е.В. Бережная и др. - М.: Финансы и статистика, 2002. – 280с.

17. Манжай И.С. Логистика: Конспект лекций. – М.: Приор-издат, 2005. – 144с.

18. Николайчук В.Е. Логистика в сфере распределения. – СПб: Питер, 2001. – 160с.

19. Николайчук В.Е. Логистика. – СПб.: Питер, 2001. – 160с.

20. Родионов В.Н., Туровец О.Г., Федоркова Н.В. Логистика: Конспект лекций. –

М.: ИНФРА-М, 2002. – 160с.

21. Сергеев В.И. Логистика в бизнесе: Учебник. – М.: ИНФРА-М, 2001. – 608с.

22. Степанов В.И. Логистика: учеб. – М.: ТК Велби, Изд-во «Проспект», 2006. – 488с.

23. Стерлигова А.Н. Прогнозирование запасов // Логистик&Система. - №10. – 2006. - с. 72-78.

24. Федюкин В.К. Управление качеством процессов. – СПб.: Питер, 2004. – 208с.

25. Фомичев С.К. и др. Основы управления качеством: Уч. пособие / С.К. Фомичев, А.А. Старостина, Н.И. Скрябина. – 2-е изд., стереотип. – К.: МАУП, 2002. – 192с.

29. Чеботаев А. А. Логистика. Логистические технологии: Уч. пособие. — М.: Издательско-торговая корпорация «Дашков и К°», 2002. — 172 с.

30. Чудаков А.Д. Логистика: Учебник. – М.: Изд-во РДЛ, 2001. – 480с.

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