



**MINISTRY OF HEALTH OF UKRAINE
NATIONAL UNIVERSITY OF PHARMACY**
Organization and economics of pharmacy Department



SYSTEMIC ANALYSIS OF HEALTH INSTITUTIONS

**WORK PROGRAM
of educational component**

training for students of 5th year higher education

(Higher Educational Level Name)

in specialty «226 'Pharmacy, industrial pharmacy'»

(Code and Specialty Name)

field of knowledge «"22 "Health Care"»

(Code and Knowledge Field Name)

of educational program «"Pharmacy"»

(Educational Program Name)

in specialization(s) second (masters) level of higher education

Kharkiv-2023

The work program of the educational component SYSTEMIC ANALYSIS OF HEALTH INSTITUTIONS» in specialty «226 'Pharmacy, industrial pharmacy'» educational program «"Pharmacy"» in specialization(s) second (masters) level of higher education for applicants for higher education 5 year of study

EDUCATIONAL COURSE TEAM:

NEMCHENKO Alla Professor Organization and economics of pharmacy Department of the National University of Pharmacy, Doctor of Pharm. Sciences, professor.

NAZARKINA Victoria. Professor, Organization and economics of pharmacy Department National University of Pharmacy, Doctor of Pharmaceutical Sciences, Professor.

MISHCHENKO Viktoriya Associate Professor, Organization and economics of pharmacy Department National University of Pharmacy, Candidate of Pharmaceutical Sciences.

Work program has been considered and approved at the Department meeting of the Organization and economics of pharmacy Department

Record from «30» 08.2023 № 1

Acting Head of the Department



prof. Anna PANFILOVA

Work program has been approved at the meeting of the Methodical Commission of in economics and management disciplines

Record from «05» 09 2023 № 3

Head of Specialized Committee



prof Alla NEMCHENKO

1. Description of the educational component

Language of study: english

Status of the educational component: to choose from

Prerequisites for studying the educational component: «Systemic Analysis of Health Institutions» formation of a system of knowledge about the methods and technologies of the organization and conducting a systemic analysis of pharmaceutical activity, to promote the formation of professionally necessary knowledge, abilities and skills of the organization and conducting an economic analysis of the activity of pharmacy establishments

The subject of educational component study «Systemic Analysis of Health Institutions» is _are the general regularities, features and principles of the formation, functioning and development of the health care management system in its relationship with the external environment from the point of view of system analysis.

Information content of the educational component. 3 ECTS credit 90 hours are assigned to the study of the educational component. 90 hours are allocated to the study of the academic discipline, 16 classroom hours (4 lectures (L), 12 practical classes (PC), independent work 74, is credited

2. Objectives and tasks of the educational component

The purpose of teaching the educational component «Systemic Analysis of Health Institutions» is purpose of teaching the educational component is formation of a system of knowledge about the methods and technologies of the organization and conducting a systemic analysis of pharmaceutical activity, to promote the formation of professionally necessary knowledge, abilities and skills of the organization and conducting an economic analysis of the activity of pharmacy establishment.

The main tasks of the educational component «Systemic Analysis of Health Institutions» is

- to acquire methodical skills of analyzing the problems of prescription dispensing using the statistical method and the survey method (questionnaire);
- consider the main directions and methods of financial analysis;
- to study the mechanisms of generalization, analysis and interpretation of data;
- familiarize yourself with the algorithm for analyzing economic indicators (turnover, formulation, inventory, trade overlays, costs, profit, profitability) using a systematic approach;
- to develop the skills of conducting an express analysis of the financial state of the enterprise based on financial reporting data;
- learn how to predict recipe indicators using mathematical and statistical methods
- learn how to analyze the price characteristics of medicines

3. Competence and planned educational outcomes

Educational component «Systemic Analysis of Health Institutions» ensures the acquisition of applicants for higher education the following **competences**:

integral:

SS 3. Ability to abstract thinking, analysis, synthesis.

SS 4. Ability to apply knowledge in practical situations.

SS 5. Knowledge and understanding of the subject area and understanding of professional activity

- SS 6. Ability to communicate in the national language both orally and in writing.
- SS 8. Skills in using information and communication technologies.
- SS 9. Ability to learn and master modern knowledge.
- SS 10. Ability to conduct research at an appropriate level.
- SS 11. Ability to adapt and act in a new situation.
- SS 12. The ability to generate new ideas (creativity).
- SS 15. The ability to act on the basis of ethical considerations (motives

general:

- HS 1. Ability to identify and describe organizational characteristics.
- HS 2. The ability to analyze the results of the organization's activities, to compare them with the factors influencing the external and internal environment.
- HS 3. The ability to determine the prospects of the organization's development.
- HS 4. The ability to determine the functional areas of the organization and the connections between them
- HS 6. The ability to act socially responsibly and consciously.
- HS 8. Ability to plan the activities of the organization and manage time.
- HS 9. Ability to work in a team and establish interpersonal interaction when solving professional tasks
- HS 10. The ability to evaluate the work performed, ensure their quality and motivate the organization's personnel.
- HS 11. Ability to create and organize effective communications in the management process.
- HS 12. The ability to analyze and structure the problems of the organization, to form reasonable solutions.
- HS 15. Ability to develop and demonstrate leadership qualities and behavioral skills

special (professional):

- Integrative final program learning outcomes (PLO), the formation of which is facilitated by the educational component
- PLO 4. Demonstrate skills in identifying problems and justifying management decisions.
 - PLO 5. Describe the content of the functional areas of the organization.
 - PLO 6. Demonstrate the skills of searching, collecting and analyzing information, calculating indicators to substantiate management decisions
 - PLO. 10. Have the skills to justify effective tools for motivating the organization's personnel.
 - PLO 11. Demonstrate skills in situation analysis and communication in various areas of the organization.
 - PLO 12. Assess the legal, social and economic consequences of the organization's functioning.
 - PLO 16. Demonstrate the skills of independent work, flexible thinking, openness to new knowledge, be critical and self-critical.
 - PLO 17. Conduct research individually and/or in a group under the guidance of a leader

As a result of studying the educational component, the applicant for higher education will be

know:

the essence and significance of system analysis in modern conditions;

- methods of system analysis;
- sources of information used for system analysis;
- subject and objects of system analysis;
- task of system analysis;
- principles of system analysis;
- classification of indicators according to various criteria;
- method of system analysis;
- types of economic analysis;
- stages of economic analysis;
- efficiency of the activity of the pharmacy (pharmaceutical, social, economic);

- system of controlled indicators (economic, financial, price);
- general characteristics of the economic indicators of pharmacy establishments;
- pharmacy as a complex economic system;
- a systematic approach in researching the problems of prescription dispensing;
- building a system of balanced indicators of pharmacy activity;
- statistical analysis of economic indicators;
- construction of series of turnover dynamics;
- methods of calculating the standard of commodity stocks;
- break-even analysis (CVP-analysis, "Cost-Volume-Profit", "costs-volume-profit");
- fixed and variable costs, factors affecting the amount and level of costs.
- the concept of the break-even point and methods of determining the break-even point (graphic, equation method);
- main directions and methods of financial analysis;
- assessment of the property status of the enterprise;
- analysis of the structure and dynamics of the balance, comparative analytical balance;
- analysis of the structure of income and expenses;
- cash flow analysis (cash flow analysis);
- main financial ratios;
- analysis of liquidity, solvency and financial stability of the enterprise;
- analysis of the business activity of pharmacies;
- the procedure for determining indicators of turnover of assets, stocks, equity, receivables and payables;
- analysis of profitability of sales, products, capital;
- analysis of price characteristics of pharmaceuticals: liquidity of prices, adequacy of solvency and availability;

be able to:

- apply methods of system analysis.
- analyze the pharmacy's turnover.
- calculate the standard of commodity stocks.
- classify costs according to different criteria.
- analyze and plan circulation costs.
- determine the financial results of the activity.
- calculate the profit and profitability of the enterprise.
- determine the break-even point of the enterprise.
- analyze the financial condition of the enterprise on the basis of financial reporting data.
- calculate the main financial indicators (liquidity, solvency, financial stability, business activity, profitability ratios).
- use the results of the analysis to make management decisions

4. The educational component structure

Names of content modules and topics	The amount of hours											
	full time study						part time study					
	the whole amount	including					the whole amount	including				
1.		sem	Practical lessons	lab	self-study	1.		sem.	Practical lessons	lab.	self-study	
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>	<i>12</i>	<i>13</i>
Content module 1. Modern methods of analysis and planning of trade and financial activities of pharmacies and pharmaceutical companies												
Topic 1. Pharmacy practice: basics of							11	1	-	1	-	9

system analysis												
Topic 2. Analysis and planning of the main economic indicators of pharmacy activity: prescription						10		-	1	-	9	
Topic 3. Economic and financial analysis of pharmacies: a systematic approach						11	1	-	1	-	9	
Topic 4. Break-even analysis (CVP-analysis) of the activity of a pharmacy						10		-	1	-	9	
The whole amount of hours for the content module 1						44	2		4		36	
Content module 2. Economic mechanisms of regulation of pharmaceutical activity												
Topic 5. Basics of financial analysis. Assessment of the property status of the enterprise. Analysis of the structure and dynamics of the balance sheet						11	1	-	1	-	9	
Topic 6. Analysis of liquidity and solvency of a pharmacy						10		-	1	-	9	
Topic 7. Evaluation of profitability and business activity of a pharmacy						11	1	-	1	-	9	
Topic 8. Analysis of drug price indicators: liquidity of prices, adequacy of solvency and availability of drugs for the population						12		-	1	-	11	
Semester credit							4					
The whole amount of hours for the course						90	4	-	12	-	74	

5. Contents of the educational component

Content module 1. Modern methods of analysis and planning of trade and financial activities of pharmacies and pharmaceutical companies

Topic 1. Pharmacy practice: basics of system analysis

Evaluation of the effectiveness of the pharmacy as a business entity and as a health care institution from the point of view of a systemic approach. The history of the emergence and development of systems theory and system analysis. The essence and significance of system analysis in modern conditions. Methods of system analysis. Criteria for evaluating the effectiveness of pharmacy practice. Sources of information used for system analysis. The subject and objects of the system analysis of the pharmacy. The task of the system analysis of the activity of the pharmacy. Basic principles of system analysis. Toolkit of system analysis. Classification of indicators according to various criteria. System analysis methodology. Types of economic analysis. Stages of economic analysis. Performance evaluation: a systematic approach. Efficiency of the activity of the pharmacy (pharmaceutical, social, economic). Performance criteria. General characteristics of the economic indicators of pharmacy establishments. System of controlled indicators (economic, financial, price).

Topic 2. Analysis and planning of the main economic indicators of pharmacy activity: prescription

Pharmacy as a complex economic system. A systematic approach in researching the problems of prescription dispensing in Ukraine. Socio-economic significance of prescription as the most important indicator of trade and financial activity of pharmacies. Formulation structure and influencing factors

Topic 3. Economic and financial analysis of pharmacies: a systematic approach

Construction of a system of balanced indicators of pharmacy activity. Statistical analysis of economic indicators. Construction of series of dynamics of turnover. Methods of calculating the standard of commodity stocks. The importance of inventory management in market conditions

Topic 4. Break-even analysis (CVP-analysis) of the activity of a pharmacy

*Break-even analysis (CVP-analysis) of the activity of a pharmacy
Break-even analysis (CVP-analysis, "Cost-Volume-Profit", "costs-volume-profit"). Fixed and variable costs. Factors affecting the amount and level of costs. The concept of the break-even point. Methods of determining the break-even point (graphic, equation method).*

Content module 2. Economic mechanisms of regulation of pharmaceutical activity

Topic 5. Basics of financial analysis. Assessment of the property status of the enterprise. Analysis of the structure and dynamics of the balance sheet

Main directions and methods of financial analysis. Financial reporting as the main source of information for analysis. Assessment of the property status of the enterprise. Analysis of the structure and dynamics of the balance sheet. Comparative analytical balance. Analysis of the structure of income and expenses according to the data of form No. 2 "Report on financial results". Analysis of cash flows (cash flow analysis) according to the data of form №. 3 (F3) "Report on cash flow".

Topic.6 Analysis of liquidity and solvency of a pharmacy

Analysis using financial ratios. Analysis of balance sheet liquidity. Analysis of solvency and financial st enterprise. The procedure for calculating indicators of total, absolute and quick liquidity. The concept capital

Topic 7. Evaluation of profitability and business activity of a pharmacy

Analysis of the business activity of pharmacies. The procedure for determining the indicators of turnover of assets, stocks, equity, receivables and payables. Analysis of profitability of sales, products, capital.

Topic 8. Analysis of drug price indicators: liquidity of prices, adequacy of solvency and availability of drugs for the population

The main price characteristics of pharmaceuticals (liquidity of prices, adequacy of solvency and availability of pharmaceuticals for the population).

Semester module supervision

6. Topics of lectures

№	Name of topic	The amount of hours	
		full time study	part time study

1	Pharmacy practice: systematic analysis of activity	1	
2	Basic concepts of systems theory and system analysis	1	
3	A pharmacy (enterprise) as a system	1	
4	Economic and financial analysis of pharmacies: a systematic approach1	1	
The whole amount of hours		4	

7. Topics of seminars (Not provided by the curriculum)

8. Topics of practical lessons

№	Name of topic	The amount of hours	
		full time study	part time study
1.	Pharmacy practice: basics of system analysis	2	
2.	Analysis and planning of the main economic indicators of pharmacy activity: prescription	1	
3.	Economic and financial analysis of pharmacies: a systematic approach	1	
4.	Break-even analysis (CVP-analysis) of the activity of a pharmacy	1	
5.	Basics of financial analysis. Assessment of the property status of the enterprise. Analysis of the structure and dynamics of the balance sheet	1	
6.	Analysis of liquidity and solvency of a pharmacy	2	
7.	Evaluation of profitability and business activity of a pharmacy	2	
8.	Analysis of drug price indicators: liquidity of prices, adequacy of solvency and availability of drugs for the population	2	
The whole amount of hours		12	

9. Topics of laboratorial lessons (Not provided by the curriculum)

10. Self-study work

№	Name of topic	The amount of hours	
		full time study	part time study
1.	Questionnaire. Compilation of questionnaires using Google Forms	11	
2.	Formulation analysis and planning	9	
3.	Economic and financial analysis of pharmacies: systemic analysis	9	
4.	Break-even analysis (CVP-analysis) of the activity of a pharmacy	9	
5.	Analysis of the structure and dynamics of the balance sheet	9	
6.	Analysis of liquidity and solvency of a pharmacy	9	
7.	Evaluation of the profitability of pharmacies	9	
8.	Analysis of price characteristics of drugs: liquidity of prices, adequacy of solvency and availability. Final modular control	9	
The whole amount of hours		74	

Tasks for Self-study work

1. Fill out a questionnaire on the proposed topics
2. Conduct a questionnaire using a Google form
3. Draw conclusions

11. Criteria and evaluation order of educational outcomes

During the study of the discipline, all types of activities of the student of higher education are subject to evaluation and control, both current (in practical training, mastering content modules) and final module (during control measures).

Module control is a diagnosis of mastery of the material of the module (credit) by the student of higher education. In module 1, there is one current control of mastering content module (CM1) and module (CM2). The semester ends with a semester assessment.

Current control is carried out at each practical session in accordance with the goals and objectives of the topic and during the individual work of the teacher with the student of higher education on those topics that the student of higher education studies independently.

The number of points according to the current control of mastering the content module (CM1,) is a maximum of 60 points, a minimum of 35 points.

The number of points for the final modular control is a maximum of 40 points, a minimum of 25 points.

The total rating of the module (discipline) does not exceed 100 points.

The module is considered completed if the student of higher education scored between 60 and 100 points.

Current assessment of the results of educational activities (performed at each practical session) - control of theoretical knowledge, practical skills and abilities.

Upon mastering each topic of content module 1, higher education applicants are awarded points for all types of activities, which are added up at the end of studying the content module (assessment at practical classes, evaluation of independent work, control of mastering of content module 1 and module 1).

Current testing and independent work										Semester credit	Sum	
Content module 1					Content module 2				CM2			
T1	T2	T3	T4	CM1	T5	T6	T7	T8				
6	6	6	6	6	6	6	6	6	6	6	40	100

The following scoring system is used:

for each subject of CM1: the minimum number of points for one subject in practical classes is 2 points, the maximum is 4 points, for independent work the minimum is 2.5, and the maximum is 5 points (see table):

Table

The type of task that is evaluated	System assessment of knowledge,	Evaluation criteria

	points		
Assessment of knowledge of practical classes (written or oral answer)	ВІД 2 ДО 4	4	awarded to a higher education applicant who, when answering questions orally or in writing, has demonstrated comprehensive, systematized, in-depth knowledge of the program material, is able to competently interpret the obtained results; demonstrated knowledge of basic and additional literature provided for at the level of creative use
		3	is presented to the applicant of higher education, if during the oral or written answer to the question, the applicant of higher education showed full knowledge of the program material provided for at the level of similar reproduction, but made some insignificant errors
		2	issued if, during an oral or written answer to a question, the applicant of higher education revealed insufficient knowledge of the main program material, to the extent necessary for further study and work provided for by the program at the level of reproductive reproduction
Independent work (abstract, presentation)		5,0	is presented to the applicant of higher education, if, when writing the essay, the applicant of higher education showed full knowledge of the program material provided for at the level of similar reproduction, but made some minor errors
		3,5	is issued if, when writing the essay, the applicant of higher education revealed insufficient knowledge of the main program material, to the extent necessary for further study and work provided for by the program at the level of reproductive reproduction
		2,5	is issued if the student of higher education has revealed insufficient knowledge of the main program material

Control of the learning of the Semester credit content module is carried out at the last practical (seminar) session of the content module.

Only those students of higher education who have completed all types of work provided for in the curriculum and completed missed practical (seminar) classes and lectures are allowed to control the acquisition of Semester credit.

Testing is the means of diagnosis regarding Semester credit acquisition. The maximum number of points for monitoring the mastery of the content module is 8 points, the minimum is 3 points.

The structure of the ticket: 15 tests, the answer to the test is 0.2 points: $0.2 \times 15 \text{ points} = 3 \text{ points}$.

Depending on the number of points earned, a student of higher education can receive a maximum of 40 points, a minimum of 17.5 points for learning Semester credit

The sum of points for all types of educational activities	Оцінка ECTS	Evaluation on a national scale
		For discipline
90 – 100	A	perfectly
82-89	B	fine

74-81	C	
64-73	D	satisfactorily
60-63	E	
35-59	FX	unsatisfactory with the possibility of reassembly
0-34	F	unsatisfactory with mandatory re-study of the discipline

12. Forms of progress and semester supervision of academic achievements

Semester control is carried out in the form of a semester credit

12. Methodological support

personal computer (laptop), Zoom, Moodle, information and search systems.....

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13. Reading suggestions

The main reading suggestions

1. Аудит: навч. посіб. для студ. вищ. навч. закл. / А. С. Немченко, В. М. Назаркіна, В. М. Чернуха та ін. – Х.: НФаУ, 2013. – [Електронний ресурс]. – Режим доступу: <http://dSPACE.nuph.edu.ua/handle/123456789/8693>
2. Основи економіки фармації : навч. посіб. для студ. ВНЗ / А. С. Немченко, В. М. Назаркіна, Г. Л. Панфілова та ін.; за ред. А. С. Немченко. – Х. : НФаУ, 2015. – 518 с. [Електронний ресурс] – Режим доступу: <http://dSPACE.nuph.edu.ua/handle/123456789/8784>
3. Організація та економіка фармації. Ч.3. Основи економіки фармації: нац. підруч. для студентів фармац.ф-тів ВНЗ МОЗ України/ А.С. Немченко, Г.Л. Панфілова, В.М. Назаркіна та ін.; за ред. А.С. Немченко.– Харків: НФаУ: Золоті сторінки, 2017.– 272 с.– (Національний підручник).
4. Немченко А. С., Назаркіна В. Н., Міщенко В. І. Системний аналіз діяльності фармацевтичних закладів : метод. рек. для самостійної роботи студентів / за ред. проф. А. С. Немченко. – Х. : НФаУ, – 47 с.
5. Системний аналіз діяльності фармацевтичних закладів : метод. рек. для практичних та семінарських занять – Вид. 2-ге, перероб. та допов. – за ред. проф. А. С. Немченко. – Х. : НФаУ, – 83 с

Supplementary reading suggestions

1. Бродський Ю. Б. Системний аналіз в економіці : Навч. посібник / Ю. Б. Бродський, К. В. Молодецька, О. М. Николук. – Житомир, 2014. – 173 с.
2. Лямец, В. И. Основы общей теории систем и системный анализ : учеб. пособие для студ. вузов / Лямец В. И., Успенко В. И. – Х. : БУРУН и К ; К. : КНТ, 2015. – 302 с.
3. Системний аналіз. Навч. посібник / О. М. Роїк, А. А. Шиян, Л.О. Нікіфорова. – Вінниця : ВНТУ, 2015. – 83 с.
4. Complex systems analysis: towards holistic approaches to health systems planning and policy : Bulletin of the World Health Organization 2011;89:242-242. doi: 10.2471/BLT.11.087544/ Pourbahloul B., Kieny M.-P. – WHO, 2011. Електронний ресурс. – Режим доступу: <http://www.who.int/bulletin/volumes/89/4/11-087544/en/>
5. Guideline for the Systems Analysis Investigation of Incidents; Revision №: 3, Approval Date: August 2016. – 78 p. <https://hse.ie/eng/about/QAVD/Incident-Management/HSE-Systems-Analysis-Investigation-Guidelines-Part-1-and-Part-2.pdf>
6. Systems analysis methodology handbook. A Coordinated Approach to Reviewing Clinical Adverse Events and Close Calls. – 2014. – 66 с.
7. Guideline for the Systems Analysis Investigation of Incidents; Revision №: 3, Approval Date: August 2016. – 78 p. <https://hse.ie/eng/about/QAVD/Incident-Management/HSE-Systems-Analysis-Investigation-Guidelines-Part-1-and-Part-2.pdf>

14. Electronic resources, including the Internet

1. Website of the Department of Pharmacy Organization and Economy НФаУ – <https://economica.nuph.edu.ua/>
2. The page of the library on the website of the NATIONAL UNIVERSITY OF PHARMACY – <https://nuph.edu.ua/naukova-biblioteka/>
3. Website of the Scientific Library of the NATIONAL UNIVERSITY OF PHARMACY of Ukraine – <https://lib.nuph.edu.ua/>
4. State register of drugs (Expert center of drugs) <http://www.drlz.kiev.ua>
5. Directory of medicines <http://www.drlz.kiev.ua>
6. World Health Organization (WHO)- <http://www.who.int/ru/>
7. Verkhovna Rada of Ukraine – <http://rada.gov.ua/>
8. Cabinet of Ukraine (government portal)– <http://www.kmu.gov.ua/>
9. Ministry of Health of Ukraine – <http://www.moz.gov.ua/ua/portal/>
10. Ministry of Economy of Ukraine – <http://www.me.gov.ua/>
11. Govt. Statistics Service of Ukraine – <http://www.ukrstat.gov.ua/>
12. State Medical Service of Ukraine – <http://www.diklz.gov.ua/>