

**DANYLO HALYTSKY LVIV NATIONAL MEDICAL UNIVERSITY**  
**Department of Toxicological and Analytical Chemistry**



**APPROVED**

The Acting First Vice-Rector for  
scientific and pedagogical work  
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**CURRICULUM ON THE OPTIONAL DISCIPLINE**  
**PHARMACEUTICAL ASPECTS OF DRUG ADDICTION**

**for students of the third year of the Pharmacy Faculty**  
for the training of specialists of the 3<sup>rd</sup> (master degree) level of higher education  
education sector 22 Public Healthcare  
**specialty 226 «Pharmacy, Industrial Pharmacy»**

**Discussed and approved**

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## INTRODUCTION

Curriculum of the elective course "**Pharmaceutical aspects of drug addiction**" is made in accordance with the draft Standard of Higher Education of Ukraine for the training of specialists of *the second (master's) level* education sector 22 "*Public Healthcare*" specialty 226 "*Pharmacy, Industrial Pharmacy*" educational program of *Master of Pharmacy*

### DESCRIPTION OF THE DISCIPLINE (ABSTRACT)

The curriculum on the subject "Pharmaceutical aspects of drug addiction" is designed for students of higher educational institutions of pharmaceutical profile of Ukraine. According to the curriculum for the preparation of pharmacists at the educational level "Master", the study of the discipline is carried out in the 3rd year (full-time form of study) for the study of which is given 90 hours, the distribution of which is as follows:

The structure of the discipline	Number of credits, hours			ISW	Year of study / semester	Type of control
	Total credits / hour	Classroom				
		Lectures (hours)	Practical classes (hours)			
Pharmaceutical aspects of drug addiction <i>Module 1</i>	3,0 credits / 90 hours	10	20	60	III year (5-6 semesters)	credit

The work program contains the necessary list of knowledge, skills and abilities, taking into account the international requirements for the credit transfer system, international regulations and standards governing the professional activities and training of the Master of Pharmacy.

Pharmaceutical aspects of drug addiction are a discipline of applied nature and its study allows to master the skills of diagnosis of drug addiction and drug addiction, its types and knowledge of the organization of drug treatment to the population.

The work program of the discipline "Pharmaceutical aspects of drug addiction" consists of studying and mastering the spread of drug addiction, drug addiction, alcoholism and their consequences, the system of drug treatment, classes and types of drug and substance abuse, polydrug addiction and psychotic states, prevention and treatment of this disease.

**The subject of study of the discipline** is the assimilation of the main groups of substances that cause drug addiction, methods of diagnosis and first aid for toxic manifestations.

#### **Interdisciplinary connections:**

Pharmaceutical aspects of drug addiction as a discipline:

- is based on knowledge of the basics of organic chemistry, normal physiology, pathological physiology, first aid;
- lays the foundations for the study of biochemistry, pharmaceutical and toxicological chemistry and provides for the formation of skills to apply the acquired knowledge for the study of special disciplines and in professional activities.

## 1. The purpose and objectives of the discipline

1.1. **The purpose of teaching the discipline "Pharmaceutical aspects of addiction"** is to teach students the basics of drug treatment in Ukraine and Europe and to study the main groups of pharmaceuticals and household chemicals, the abuse of which causes addiction; mastering practical skills in diagnosing the symptoms of poisoning; providing first aid in case of substance abuse; formation of skills and abilities to conduct information work in practical professional activities regarding the harmful effects of drug addicts on human health.

1.2. **The main tasks of studying the discipline "Pharmaceutical aspects of drug addiction"** are:

- study of social, physiological and psychological factors that are leading in the etiology of drug addiction, drug addiction and alcoholism;
- search for rational methods and techniques of prevention and treatment;
- analysis of causes of death caused by drug and substance abuse;
- analysis of the spread of drug addiction, drug addiction and alcoholism among the population of different age groups;
- planning and organization of drug treatment (informing) the population.

1.3. **Competences and learning outcomes**, the formation of which is facilitated by the discipline (relationship with the normative content of training of higher education seekers, formulated in terms of learning outcomes in the Standard of Higher Education).

According to the requirements of the standard, the discipline ensures the acquisition of competencies by students:

***integral:***

- ability to solve typical and complex specialized problems and practical problems in the learning process, which involves research, innovation and is characterized by complexity;

***general:***

- GC 1. The ability to act socially responsibly and civically.
- GC 2. Ability to apply knowledge in practical situations.
- GC 4. Ability to think abstractly, analyze and synthesize, learn and be modernly educated.
- GC 6. Knowledge and understanding of the subject area and understanding of professional activity.
- GC 7. Ability to adapt and act in a new situation.
- GC 8. The ability to communicate in the state language both orally and in writing, the ability to communicate in a foreign language (mainly English) at a level that ensures effective professional activity.
- GC 10. The ability to choose a communication strategy, the ability to work in a team and with experts from other fields of knowledge/types of economic activity.
- GC 13. The ability to realize one's rights and responsibilities as a member of society, to realize the values of a civil (free democratic) society and the need for its sustainable development, the rule of law, the rights and freedoms of a person and a citizen in Ukraine.
- GC 14. The ability to preserve and multiply moral, cultural, scientific values and achievements of society based on an understanding of the history and patterns of development of the subject area, its place in the general system of knowledge about nature and society and in the development of society, techniques and technologies, to use different types and forms motor activity for active recreation and leading a healthy lifestyle;

***special (professional, subject):***

- PC 1. The ability to carry out sanitary and educational work among the population for the purpose of prevention of common diseases, prevention of dangerous infectious, viral and

parasitic diseases, as well as for the purpose of promoting timely detection and support of adherence to the treatment of these diseases according to their medical and biological characteristics and microbiological features .

- PC 2. The ability to consult on prescription and non-prescription drugs and other products of the pharmacy assortment; pharmaceutical care during the selection and sale of an over-the-counter medicinal product by assessing the risk/benefit ratio, compatibility, indications and contraindications guided by data on the health status of a specific patient, taking into account the biopharmaceutical, pharmacokinetic, pharmacodynamic and physicochemical features of the medicinal product and other products of the pharmacy assortment .
- PC 6. The ability to identify medicinal products, xenobiotics, toxins and their metabolites in biological fluids and body tissues, to conduct chemical and toxicological studies for the purpose of diagnosing acute poisoning, drug and alcohol intoxication.
- PC 12. Ability to use knowledge of regulatory and legislative acts of Ukraine and recommendations of proper pharmaceutical practices in professional activity.
- PC 13. The ability to demonstrate and apply in practical activities communicative communication skills, fundamental principles of pharmaceutical ethics and deontology, based on moral obligations and values, ethical standards of professional behavior and responsibility in accordance with the Code of Ethics of Pharmaceutical Workers of Ukraine and WHO guidelines.
- PC 18. Ability to develop and implement the quality management system of pharmaceutical enterprises in accordance with the requirements of current Standards, to conduct quality audits and risk management for the quality of pharmaceutical products.

Detailing of competencies according to NQF descriptors in the form of "Competence Matrix".

### Competence Matrix

No	Competence	Knowledge	Skills	Communication	Autonomy and responsibility
1	2	3	4	5	6
<b>Integral competence</b>					
ability to solve typical and complex specialized tasks and practical problems in professional activities in the field of health care, or in the learning process, which involves research or innovation and is characterized by complexity.					
<b>General competencies</b>					
1	the ability to act socially responsibly and civically	To know the basic principles of social interaction and public consciousness in professional activities	To be able to identify future professional activity as socially significant for human health	Conduct professional activities in social interaction based on humanistic and ethical principles	To be responsible for preserving health, in particular with regard to the prevention of diseases, the rational prescription and use of medicines
2	Ability to apply knowledge in practical situations.	Have specialized conceptual	To be able to solve complex tasks and problems that arise	Clear and unambiguous presentation of	Be responsible for making decisions in

		knowledge acquired in the learning process.	in professional activity.	one's own conclusions, knowledge and explanations that justify them to specialists and non-specialists.	difficult conditions.
3	Ability to think abstractly, analyze and synthesize, learn and be modernly trained.	Know methods of analysis, synthesis and further modern education.	Be able to analyze information, make informed decisions, be able to acquire modern knowledge.	Establish appropriate connections to achieve goals.	To be responsible for the timely acquisition of modern knowledge.
4	Knowledge and understanding of the subject area and understanding of professional activity.	Have deep knowledge of the structure of professional activity.	To be able to carry out professional activities that require updating and integration of knowledge.	The ability to effectively form a communication strategy in professional activities.	To be responsible for professional development, the ability for further professional training with a high level of autonomy.
5	Ability to adapt and act in a new situation.	To know communication tactics and strategies, laws and methods of communicative behavior.	Be able to choose communication strategies to ensure effective teamwork.	Use communication strategies and interpersonal skills.	To be responsible for the choice and tactics of the method of communication.
6	The ability to communicate in the state language both orally and in writing, the ability to communicate in a foreign language (mainly English) at a level that ensures effective professional activity.	Know the state language both orally and in writing, as well as a foreign language for communication in professional activities	Be able to use communication skills in both the state and foreign languages, analyzing specialized texts and translating foreign language information sources	Carry out professional activities using both the state and foreign languages	To be responsible for effective professional activity both in the state language and in a foreign language.
7	The ability to choose a communication strategy, the ability to work in a team and with experts	Know the norms of communication in professional	To be able to possess psychological communication skills to achieve	Adhere to the norms of communication in professional activities, possess	Be responsible for choosing a communication strategy, the ability to work

	from other fields of knowledge/types of economic activity.	interaction with colleagues, management, doctors, patients, consumers.	trust and mutual understanding with colleagues, doctors, patients, consumers.	communication skills to achieve trust and mutual understanding	in a team and communication norms
8	The ability to realize one's rights and responsibilities as a member of society, to realize the values of a civil (free democratic) society and the need for its sustainable development, the rule of law, the rights and freedoms of a person and a citizen in Ukraine.	To know one's rights and responsibilities as a member of society, to be aware of the values of a civil (free democratic) society and the need for its sustainable development, the rule of law, the rights and freedoms of a person and a citizen in Ukraine.	Be able to plan and implement one's professional activities on the basis of normative legal acts of Ukraine and recommendations of proper pharmaceutical practices	To exercise one's rights and responsibilities as a member of society, to be aware of the values of civil (free democratic) society and the need for its sustainable development, the rule of law, the rights and freedoms of a person and a citizen in Ukraine.	To be responsible for their professional duties, to contribute to the preservation of health, compliance with the legislation on the promotion and advertising of medicinal products
9	The ability to preserve and multiply moral, cultural, scientific values and achievements of society based on an understanding of the history and patterns of development of the subject area, its place in the general system of knowledge about nature and society and in the development of society, technology and technologies, to use various types and forms of motor activity for active recreation and leading a healthy	To know the moral, cultural, scientific values and achievements of society on the basis of understanding the history and patterns of development of the subject area, its place in the general system of knowledge about nature and society and in the development of society, technology	To be able to use different types and forms of motor activity for active recreation and leading a healthy lifestyle	Use, preserve and multiply moral, cultural, scientific values and achievements of society based on understanding the history and patterns of development of the subject area, its place in the general system of knowledge about nature and society and in the development of society, technology and technology.	To be responsible for the preservation of moral, cultural, scientific values and achievements of society in the development of the subject area

	lifestyle	and technology.			
<b>Special (professional, subject) competencies</b>					
1	The ability to carry out sanitary and educational work among the population for the purpose of prevention of common diseases, prevention of dangerous infectious, viral and parasitic diseases, as well as for the purpose of promoting timely detection and support of adherence to the treatment of these diseases according to their medico-biological characteristics and microbiological features.	To know the basic principles of sanitary and educational work among the population in order to prevent and promote the timely detection and maintenance of adherence to the treatment of diseases according to their medical and biological characteristics.	To be able to carry out sanitary and educational work among the population in order to prevent diseases, promote timely detection and maintain adherence to the treatment of diseases according to their medical and biological characteristics	Use the basic principles of sanitary and educational work among the population regarding the use of drugs that lead to drug addiction	To be responsible for sanitary and educational work among the population regarding the use of drugs that lead to drug addiction
2	The ability to consult on prescription and non-prescription drugs and other products of the pharmacy assortment; pharmaceutical care during the selection and sale of an over-the-counter medicinal product by assessing the risk/benefit ratio, compatibility, indications and contraindications guided by data on the health status of a specific patient, taking into account	Know the peculiarities of assessing the risk/benefit ratio, compatibility, indications and contraindications, guided by data on the health status of a specific patient, taking into account the physical and chemical characteristics of the drug and other products of the pharmacy	To be able to provide advice on prescription and non-prescription drugs and other products of the pharmacy assortment, pharmaceutical care during the selection and sale of non-prescription drugs	It is justified to carry out consultations regarding prescription and non-prescription drugs and other products of the pharmacy assortment; during the selection and sale of an over-the-counter medicinal product	To be responsible for consulting on prescription and non-prescription drugs and other products of the pharmacy assortment; during the selection and sale of an over-the-counter medicinal product



	the biopharmaceutical, pharmacokinetic, pharmacodynamic and physicochemical features of the medicinal product and other products of the pharmacy assortment .	assortment.			
3	The ability to identify medicinal products, xenobiotics, toxins and their metabolites in biological fluids and tissues of the body, to conduct chemical and toxicological studies for the purpose of diagnosing acute poisoning, drug and alcohol intoxication.	To know the specifics of determining medicines, xenobiotics, toxins and their metabolites in biological fluids and body tissues for the purpose of diagnosing acute poisoning, drug and alcohol intoxication.	To be able to determine the influence of factors affecting the processes of absorption, distribution, deposition, metabolism and excretion of a medicinal product for the purpose of diagnosing acute poisoning, drug and alcohol intoxication.	Reasonably evaluate the consequences of abuse of toxic compounds.	To be responsible for organizing and providing information among the population about intoxication by toxic substances and their harmful effects.
4	the ability to use knowledge of regulatory and legislative acts of Ukraine and recommendations of proper pharmaceutical practices in professional activities	to know and use knowledge of regulatory and legislative acts of Ukraine and recommendations of proper pharmaceutical practices in professional activities	be able to use knowledge of regulatory and legislative acts of Ukraine and recommendations of proper pharmaceutical practices in professional activities	the ability to establish communication links in professional activities when considering regulatory and legislative acts of Ukraine.	Be responsible for knowledge of regulatory and legislative acts of Ukraine and recommendations of proper pharmaceutical practices
5	The ability to demonstrate and apply in practical activities communicative communication skills, fundamental principles of	Know the basic principles of communication skills, fundamental principles of pharmaceutical	To be able to apply in practical activities communicative communication skills, fundamental principles of pharmaceutical	Argue information for decision-making in practical activities using the fundamental principles of pharmaceutical ethics and	be responsible for decisions in standard and non-standard professional situations; adhere to the

	pharmaceutical ethics and deontology, based on moral obligations and values, ethical standards of professional behavior and responsibility in accordance with the Code of Ethics of Pharmaceutical Workers of Ukraine and WHO guidelines.	l ethics and deontology, based on moral obligations and values, ethical standards of professional behavior and responsibility in accordance with the Code of Ethics of Pharmaceutica l Workers of Ukraine and WHO guidelines.	ethics and deontology based on moral obligations and values, ethical norms of professional behavior and responsibility in accordance with the Code of Ethics of Pharmaceutical Workers of Ukraine and WHO guidelines	deontology based on moral obligations and values, ethical norms of professional behavior	principles of deontology and ethics in professional activity.
6	The ability to develop and implement the quality management system of pharmaceutical enterprises in accordance with the requirements of current Standards, to conduct quality audits and risk management for the quality of pharmaceutical products.	Know all types of quality control of medicinal products, requirements for series quality certificates and analysis quality, taking into account the requirements of current regulatory documents.	Be able to carry out all types of quality control of medicinal products; draw up quality certificates of a series of medicinal products and a certificate of analysis, taking into account the requirements of current regulatory documents, the State Pharmacopoeia of Ukraine and the results of quality control. Develop specifications and quality control methods in accordance with the requirements of the current Federal Government of Ukraine.	Use methods of evaluating performance quality indicators; to carry out quality audits and risk management for the quality of pharmaceutical products.	To be responsible for the development and implementation of the quality management system of pharmaceutical enterprises in accordance with the requirements of current Standards, to carry out quality audits and risk management for the quality of pharmaceutical products.

***Learning outcomes:***

*Integrative final program learning outcomes, the formation of which is facilitated by the discipline:*

- PLO 1. To carry out professional activities in social interaction based on humanistic and ethical principles; to identify future professional activity as socially significant for human health.
- PLO 2. Apply knowledge from general and specialized disciplines in professional activity.
- PLO 4. Demonstrate the ability to independently search, analyze and synthesize information from various sources and use these results to solve typical and complex specialized tasks of professional activity.
- PLO 6. Argue information for decision-making, bear responsibility for them in standard and non-standard professional situations; adhere to the principles of deontology and ethics in professional activity.
- PLO 7. Perform professional activities using creative methods and approaches.
- PLO 8. Carry out professional communication in the state language, use oral communication skills in a foreign language, analyzing specialized texts and translating foreign language information sources.
- PLO 9. To carry out professional activities using information technologies, "Information databases", navigation systems, Internet resources, software and other information and communication technologies.
- PLO 10. Adhere to the norms of communication in professional interaction with colleagues, management, consumers, work effectively in a team.
- PLO 11. Use methods of evaluating indicators of the quality of activity; identify reserves for increasing labor efficiency.
- PLO 12. Analyze information obtained as a result of scientific research, summarize, systematize and use it in professional activities.
- PLO 14. Determine the advantages and disadvantages of drugs of various pharmacological groups, taking into account their chemical, physicochemical, biopharmaceutical, pharmacokinetic and pharmacodynamic features. Recommend to consumers over-the-counter medicines and other products of the pharmacy assortment with the provision of advisory assistance and pharmaceutical care.
- PLO 16. Determine the influence of factors that affect the processes of absorption, distribution, deposition, metabolism and excretion of a medicinal product and are determined by the condition, features of the human body and the physicochemical properties of medicinal products.
- PLO 17. To use the data of clinical, laboratory and instrumental studies to monitor the effectiveness and safety of the use of medicinal products.
- PLO 18. Choose biological objects of analysis, determine xenobiotics and their metabolites in biological environments and evaluate the results obtained taking into account their distribution in the body.
- PLO 19. Predict and determine the influence of environmental factors on the quality of medicines and consumer characteristics of other products of the pharmacy assortment during their storage.
- PLO 24. Plan and implement professional activities on the basis of normative legal acts of Ukraine and recommendations of proper pharmaceutical practices.
- PLO 25. Contribute to the preservation of health, in particular the prevention of diseases, the rational prescription and use of medicinal products. To faithfully fulfill one's professional duties, to comply with the legislation on the promotion and advertising of medicinal products. Possess psychological communication skills to achieve trust and mutual understanding with colleagues, doctors, patients, consumers.

Learning outcomes for the discipline "Pharmaceutical aspects of drug addiction":

**know:**

- basic provisions for the organization of drug treatment to the population;
- main phases of withdrawal syndrome and intoxication;
- consequences of substance abuse;
- mental, behavioral and somatoneurological disorders in drug addiction and polytoxicomania;
- compounds that cause drug addiction, their physicochemical properties.

**be able:**

- use professional knowledge in solving practical issues;
- to carry out preventive informing of the population concerning harmfulness of various types of drug addiction;
- provide first aid for drug poisoning;
- work independently with educational and reference literature;
- apply the basics of pharmaceutical addiction in the study of specialized disciplines.

## **2. Information volume of the discipline**

3 ECTS credits / 90 hours are allocated for the study of the academic discipline. The organization of the educational process is carried out according to the credit transfer system in accordance with the requirements of the European credit transfer and accumulation system.

The program of the discipline is structured on 1 content module.

The amount of student workload is described in ECTS credits - credit credits, which are credited to students upon successful mastering of modules (credit credits).

### **Content module 1. Basics of drug addiction.**

**Topic 1.** Subject, tasks and objectives of the discipline "Pharmaceutical bases of drug addiction".

Organization of drug treatment in Ukraine. Terminology and classification in narcology. The concept of drug addiction, drug addiction, polydrug addiction, drug addiction, drug addiction, alcohol abuse. Psychoactive compounds. Classifications of psychoactive drugs. Patterns of flow and syndromology of dependence on psychoactive substances. Legislation.

Peculiarities of drug addiction formation in persons with mental disorders (borderline states, psychopathy, alcoholism, schizophrenia, organic CNS disorders, etc.).

Types of addiction. Classification of addiction according to the method of introduction of the substance into the body and the nature of the compounds used.

**Topic 2.** Abuse of sleeping pills (barbituric acid derivatives) and tranquilizers (benzodiazepines). The mechanism of their action on the body, pharmacokinetics. Biochemical properties of drugs of these groups. Acute intoxication. Consequences of abuse of sleeping pills and tranquilizers. Clinical picture of drug addiction. Phases of withdrawal syndrome caused by these drugs.

**Topic 3.** Addictions caused by neuroleptics. Drug addiction due to abuse of psychostimulants and antidepressants. Consequences caused by chronic intoxication with psychostimulants.

**Topic 4.** Abuse of cholinolytic drugs and antihistamines (cyclodol, atropine, solutan, diphenhydramine, etc.). Drug addiction caused by the abuse of synthetic non-drug analgesics. The main drugs of this group. Toxic manifestations.

**Topic 5.** Abuse of volatile substances. Classification of volatile solvents used by inhalation. Products and goods containing components of volatile organic compounds (adhesives, aerosols, lighters, stain removers, degreasing agents, varnish removers, solvents, paints, varnishes, gasoline, markers, correctors, amyl nitrite), their composition. Mechanism of

action on the body, pharmacokinetics. Consequences caused by their abuse. Consequences of chronic intoxication by inhalants. Drug addiction with inhaler abuse.

**Topic 6.** Nicotine and caffeine addiction. Caffeine content in caffeinated products and medicines. The mechanism of their action on the body and pharmacokinetics. Symptoms of intoxication. Consequences of abuse for the human body.

**Topic 7.** Designer drugs. Polydrug addiction and political addiction. Causes of development. Complicated drug addiction. Addiction complicated by alcoholism. Transformation of types of drug addiction and substance abuse. Features of formation and flow. Features of cancellation states.

### 3. The structure of the discipline

Topic	Number of hours			
	Lectures	Tutorials	ISW	Ind.
1	2	3	4	5
<b>Module 1. Basics of drug addiction.</b>				
<b>Topic 1.</b> Subject, tasks and objectives of the discipline "Pharmaceutical bases of drug addiction". Types of addiction. Classification of drug addiction.	2	2	4	
<b>Topic 2.</b> Addiction caused by the abuse of sleeping pills (barbituric acid derivatives) and tranquilizers of the benzodiazepine series.	2	2	8	
<b>Topic 3.</b> Addictions caused by neuroleptics. Drug addiction due to abuse of psychostimulants and antidepressants.	1	2	8	
<b>Topic 4.</b> Abuse of cholinolytic drugs and antihistamines (cyclodol, atropine, solutan, diphenhydramine, etc.). Drug addiction caused by the abuse of synthetic non-drug analgesics.	1	2	4	
<b>Topic 5.</b> Abuse of volatile substances. Consequences of chronic intoxication with inhalants.	2	4	10	
<b>Topic 6.</b> Nicotine and caffeine addiction. Symptoms of intoxication. Consequences of abuse for the human body.		2	6	
<b>Topic 7.</b> Designer drugs. Polydrug addiction and political addiction.	1	2	8	
<b>Topic 8.</b> Addiction complicated by alcoholism. Transformation of types of drug addiction and substance abuse.	1	2	4	
Current control of <b>module 1</b>		2	4	
Final control of the <b>module 1</b> . Credit for practical skills		2	4	
<b>Total</b>	<b>10</b>	<b>20</b>	<b>60</b>	

### 4. Thematic plan of lectures

No	Topic	Hours
<b>Content module 1. Basics of drug addiction.</b>		
1.	Organization of drug treatment in Ukraine. Terminology and classification in narcology. The concept of drug addiction, drug addiction, polydrug addiction, drug addiction, drug addiction, alcohol abuse. Psychoactive compounds. Classifications of psychoactive drugs. Patterns of	2

	flow and syndromology of dependence on psychoactive substances. Legislation. Features of the formation of drug addiction in people with mental disorders (borderline conditions, psychopathy, alcoholism, schizophrenia, organic disorders of the CNS, etc.).	
2.	Drug addiction caused by barbituric acid derivatives and benzodiazepine drugs. The mechanism of their action on the body, pharmacokinetics. Biochemical properties of drugs of these groups. Acute intoxication. Consequences of abuse of sleeping pills and tranquilizers. Clinical picture of drug addiction. Phases of withdrawal syndrome caused by these drugs.	2
3.	Addictions caused by neuroleptics, psychostimulants and antidepressants. Abuse of cholinolytic drugs and antihistamines (cyclodol, atropine, solutan, diphenhydramine, etc.). Drug addiction caused by the abuse of synthetic analgesics that are not related to drugs. Toxic manifestations. Consequences of chronic intoxication with these compounds.	2
4.	Drug addiction with inhaler abuse. Classification of volatile solvents used by inhalation. Products and goods containing components of volatile organic compounds (adhesives, aerosols, lighters, stain removers, degreasing agents, varnish removers, solvents, paints, varnishes, gasoline, markers, correctors, amyl nitrite), their composition. The mechanism of their action on the body, pharmacokinetics. Consequences caused by their abuse. Consequences of chronic intoxication with inhalants.	2
5.	Nicotine and caffeine addiction. Caffeine content in caffeinated products and medicines. The mechanism of their action on the body and pharmacokinetics. Symptoms of intoxication. Consequences of abuse for the human body. Designer drugs. Polydrug addiction and political addiction. Causes of development. Complicated drug addiction. Addiction complicated by alcoholism. Transformation of types of drug addiction and substance abuse. Features of formation and flow. Features of cancellation states.	2
<b>Total</b>		<b>10</b>

### 5. Thematic plan of practical classes

No	Topic	Hours
<b>Module 1. Basics of drug addiction.</b>		
1.	Subject, tasks and goals of the discipline "Pharmaceutical bases of drug addiction". Types of addiction. Classification of drug addiction.	2
2.	Addiction caused by the abuse of hypnotics (barbituric acid derivatives) and benzodiazepine tranquilizers.	2
3.	Addictions caused by neuroleptics. Drug addiction due to abuse of psychostimulants and antidepressants.	2
4.	Abuse of cholinolytic drugs and antihistamines (cyclodol, atropine, solutan, diphenhydramine, etc.). Drug addiction caused by the abuse of synthetic analgesics that are not related to drugs.	2
5.	Volatile substance abuse. Consequences of chronic intoxication with inhalants.	4
6.	Nicotine and caffeine addiction. Symptoms of intoxication. Consequences of abuse for the human body.	2
7.	Дизайнерські наркотики. Полінаркоманія і політоксикоманія.	2
8.	Addiction complicated by alcoholism. Transformation of types of drug addiction and substance abuse.	2
9	Current control of <b>module 1.</b>	2

10.	Final control of the <b>module 1</b> . Credit for practical skills.	2
	<b>Total</b>	<b>20</b>

## 6. Thematic plan of individual work of students

No	Topic	Hours
<b>Module 1. Basics of drug addiction.</b>		
1	<b>Topic 1.</b> Subject, tasks and objectives of the discipline "Pharmaceutical bases of drug addiction". Types of addiction. Classification of drug addiction.	4
2	<b>Topic 2.</b> Addiction caused by the abuse of sleeping pills (barbituric acid derivatives) and tranquilizers of the benzodiazepine series.	8
3	<b>Topic 3.</b> Addictions caused by neuroleptics. Drug addiction due to abuse of psychostimulants and antidepressants.	8
4	<b>Topic 4.</b> Abuse of cholinolytic drugs and antihistamines (cyclodol, atropine, solutan, diphenhydramine, etc.). Drug addiction caused by the abuse of synthetic analgesics that are not related to drugs.	4
5	<b>Topic 5.</b> Abuse of volatile substances. Consequences of chronic intoxication with inhalants.	10
6	<b>Topic 6.</b> Nicotine and caffeine addiction. Symptoms of intoxication. Consequences of abuse for the human body.	6
7	<b>Topic 7.</b> Designer drugs. Polydrug addiction and political addiction.	8
8	<b>Topic 8.</b> Addiction complicated by alcoholism. Transformation of types of drug addiction and substance abuse.	4
9	Preparation for the current control of Module 1.	4
10	Preparation for a test of practical skills. Preparation for the final control of Module 1.	4
	<b>Total</b>	<b>60</b>

## 7. Individual tasks for full-time students are not provided.

### Tasks for independent work

1. In order to prepare for the seminar, the student should, according to the list of theoretical questions, using the textbook, study the theory on the topic, give a written answer to homework questions, get acquainted with control questions and situational tasks and be ready to make short presentation.
2. To study the structure of the organization of the narcological service in Ukraine and abroad. Know their features and differences.
3. Know the differences between the terms drug addiction and substance abuse, drug addiction and drug addiction.
4. Types of addiction. Classification of addiction according to the method of introduction of the substance into the body and the nature of the compounds used.
5. Psychogenic causes of addiction.
6. Clinical picture of drug addiction.
7. Withdrawal syndromes in drug addiction, their characteristics. Phases of withdrawal syndrome.
8. Toxic manifestations caused by drug addiction.
9. Derivatives of barbituric acid, which cause drug addiction. Their chemical formulas, doses and brief characteristics of pharmacological action.

10. Benzodiazepine tranquilizers as a cause of drug addiction. Their chemical formulas, doses and brief characteristics of pharmacological action.
11. Hypnotics that cause drug addiction, their brief characteristics
12. Tranquilizers as a cause of drug addiction. Drugs of this group.
13. Drug addictions caused by drugs from the group of neuroleptics. Basic drugs.
14. Addictions caused by abuse of psychostimulants and antidepressants. Chronic intoxication caused by psychostimulants.
15. Addictions caused by abuse of cholinolytic drugs. Basic drugs.
16. Addictions caused by abuse of antihistamines.
17. Drug addiction caused by the abuse of synthetic non-narcotic analgesics. The main representatives.
18. Classification of volatile solvents used by inhalation.
19. The composition of adhesives, aerosols, lighters, stain removers, degreasers, varnish removers, solvents, paints, varnishes, gasoline, markers, correctors, the components of which cause drug addiction.
20. Mechanism of action on the body and pharmacokinetics of volatile solvents. Consequences of chronic intoxication by inhalants.
21. Nicotine addiction. Mechanism of action on the body and pharmacokinetics. Symptoms of intoxication.
22. Caffeine addiction. Medicines containing caffeine. Symptoms of intoxication. Consequences of abuse for the human body.
23. Designer drugs. Their characteristics.
24. Polydrug addiction and political addiction. Causes of development.
25. 25. Complicated drug addiction. Addiction complicated by alcoholism.
26. Transformation of types of drug addiction and substance abuse. Features of formation and flow.
27. Features of cancellation states.

## 8. Teaching methods

In the methods of organization and implementation of educational and cognitive activities there are verbal, visual (lectures, theoretical part of the seminar) and search problems (preparation for the seminar, testing, modular control, individual tasks). Preference is given to active, interactive methods and multimedia learning (multimedia lectures, educational films).

## 9. Control methods

When assessing students' knowledge, preference is given to standardized methods of control: testing, content and final control of the module takes place in the form of structured written work, structured control of practical skills in conditions close to real.

*Current control* is carried out at each seminar in accordance with the specific objectives of the topic, during the individual work of the teacher with students for topics that the student develops independently and they are not part of the structure of the seminar. It is recommended to use types of objective (standardized) control of theoretical and practical training of students.

Forms of current control:

- theoretical knowledge - test tasks, individual survey, interview;
- practical skills and abilities - solving typical and situational problems, writing formulas of pharmaceuticals and individual control of practical actions;

The *final control* of the module is carried out at the last seminar and includes control of theoretical knowledge, practical skills and abilities, is carried out in the form of control work.

## Methods and tools of standardized evaluation



**Current control** is carried out during seminars.

**Evaluation of current educational activities.** At each practical lesson, the student answers 10 tests and 1 question on the topic of the seminar.

### **Evaluation criteria**

**I. Current control.** At each lesson, the level of students' knowledge is assessed on a 4-point (national) scale. All types of work provided by the discipline program are taken into account.

The student receives a grade from each topic for further conversion of grades into points on a multi-point (200-point) scale.

**Excellent ("5").** The student correctly answered 100-90% of the tests of format A. Correctly, clearly, logically and fully answers the standardized questions of the current topic, including questions of the lecture course and independent work.

**Good ("4").** The student correctly answered 70-89% of A-format tests, correctly and essentially answers the standardized question of the current topic, lecture course and independent work. Is able to solve easy and medium situational problems.

**Satisfactory ("3").** The student correctly answered 50-69% of the tests of format A. Incomplete, with the help of additional questions, answers the standardized questions of the current topic, lecture course and independent work. Cannot build a clear, logical answer on their own. Error answer. The student has only the required minimum of theoretical knowledge.

**Unsatisfactory ("2").** The student answered less than 50% of the tests of format A. Does not know the material of the current topic, can not build a logical answer, does not answer additional questions, does not understand the content of the material.

The student's independent work is assessed during the current control of the topic in the relevant classroom. Assessment of topics that are submitted for self-study and are not included in the topics of classroom classes, are controlled during the final tests.

An intermediate and final modular control is evaluated according to a similar scheme.

**11. The form of final control** of academic performance in the study of the discipline is a credit. The final control consists of a written answer to the test tasks of format A (blank). The student answers 40 test tasks of format A on each topic of the module and is evaluated with 2 points for each correct answer.

The credit score is determined by the sum of points for answers to test tasks. The maximum number of points in the test is 80. The minimum number of points is 50.

### **12. Scheme of accrual and distribution of points received by students:**

The grade for the module is defined as the sum of the grades of the current educational activity and the grade of the final module control and is expressed on a 200-point scale.

The maximum number of points that a student can score in the study of each module is 200 points, including 120 points for current learning activities.

Recalculation of the average score for current activities in a multi-point scale is based on the table:

#### **Recalculation of the average score for current activities in a multi-point scale**

4-points scale	5	4.97	4.95	4.92	4.9	4.87	4.85	4.82	4.8	4.77	4.75	4.72	4.7
200-points	200	199	198	197	196	195	194	193	192	119	190	189	188

scale													
4-points scale	4.67	4.65	4.62	4.6	4.57	4.52	4.5	4.47	4.45	4.42	4.4	4.37	4.35
200-points scale	187	186	185	184	183	181	180	179	178	177	176	175	174
4-points scale	4.32	4.3	4.27	4.24	4.22	4.19	4.17	4.14	4.12	4.09	4.07	4.04	4.02
200-points scale	173	172	171	170	169	168	167	166	165	164	163	162	161
4-points scale	3.99	3.97	3.94	3.92	3.89	3.87	3.84	3.82	3.79	3.77	3.74	3.72	3.7
200-points scale	160	159	158	157	156	155	154	153	152	151	150	149	148
4-points scale	3.67	3.65	3.62	3.57	3.55	3.52	3.5	3.47	3.45	3.42	3.4	3.37	3.35
200-points scale	147	146	145	144	143	142	141	140	139	138	137	136	135
4-points scale	3.32	3.3	3.27	3.25	3.22	3.2	3.17	3.15	3.12	3.1	3.07	3.02	3
200-points scale	133	132	131	130	129	128	127	126	125	124	123	121	120
4-points scale	<b>Less than 3</b>												
200-points scale	Not enough												

Discipline scores for students who have successfully completed the program are converted into a traditional 4-point scale according to the absolute criteria, which are given in the table below:

Points in the discipline	Score on a 4-point scale
From 170 to 200 points	5
From 140 to 169 points	4
From 139 points to the minimum number of points that a student must score	3
Below the minimum number of points that a student must score	2

The ECTS score is not converted to the traditional scale, as the ECTS scale and the four-point scale are independent.

The objectivity of the assessment of students' learning activities is checked by statistical methods (correlation coefficient between ECTS assessment and assessment on a national scale).

### 13. Methodical support

1. Curriculum of the discipline.
2. Methodical materials of computer presentations of lectures.
3. Methodical recommendations for seminars and independent work of students.
4. Issues of current control of the content module 1.

5. Questions of final control of the content module 1.
6. List of questions on practical skills.

#### **14. Recommended Literature**

##### ***Basic:***

1. Substance Abuse DANTES/DSST Test Study Guide Paperback – Breely Crush Publishing, 2020. – 140 p.
2. Dare S.P., Begun A. Introduction to Substance Use Disorders. – Creative Commons Attribution, 2020. – 406 p.
3. Dasgupta A. Critical Issues in Alcohol and Drugs of Abuse Testing. – Academic Press, 2019. – 560 p.

**15. Information source:** Verstraete A.G.; Mukhdomi T. Clinical Drug Testing – <https://www.ncbi.nlm.nih.gov/books/NBK557523/>