#### DANYLO HALYTSKY LVIV NATIONAL MEDICAL UNIVERSITY

Department of Toxicological and Analytical Chemistry

#### **APPROVED**

The first vice-rector for scientific and pedagogical work prof. M.R. Grzegotskyi

«31» August

2021

# THE WORKING CURRICULUM OF THE ELECTIVE DISCIPLINE

#### PHARMACEUTICAL ASPECTS OF SUBSTANCE ABUSE

## for students of the third year of the pharmaceutical faculty in V - VI semesters

training of specialists of the second (master's) level of higher education educational qualification «Master of Pharmacy» education sector 22 «Public Healthcare»

Specialty 226 "Pharmacy, Industrial Pharmacy"

Discussed and approved

at the methodical meeting of the Department of Toxicological and Analytical Chemistry, protocol No 1 from 31.08.2021 Head of the department

Assoc. prof. I.Y. Halkevych

«Approved»

by profile methodical commission in pharmaceutical disciplines Protocol No. 3 from 31.08.2021 Head of the profile methodical commission

Assoc. prof. S.B. Bilous.

Working curriculum of the elective discipline "Pharmaceutical aspects of substance abuse" for 3rd year students of the Faculty of Pharmacy, studying in the specialty 226 "Pharmacy, Industrial Pharmacy"

worked out by Associated professor Halkevych I.Y., senior lecturer Kostyshyn L.P., senior lecturer Kramarenko S.Y., assistant professor Davydovych S.I.

in accordance with the draft Standard of Higher Education of Ukraine for the training of specialists of the second (master's) level of higher education in the field of knowledge 22 "Health" specialty 226 "Pharmacy, Industrial Pharmacy" of the educational program of Master of Pharmacy.

## Changes and additions to the curriculum for the academic discipline

### for 2021-2022 academic year

No.	Contents of changes (additions)	Date and No. of the department meeting № 1 from 31.08. 2021	Notes
1.	No changes or additions were made	No. 1 from 31.08. 2021	
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Head of the department of Toxicological and Analytical Chemistry



Assoc. prof. I.Y. Halkevych

#### INTRODUCTION

The working curriculum of the elective course "Pharmaceutical aspects of drug addiction" is made in accordance with the draft Standard of Higher Education of Ukraine training of specialists of the second (master's) level of higher education in the field of knowledge 22 "Healthcare" specialty 226 "Pharmacy".

#### **Description of the discipline (annotation)**

The work program 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-timee form of study) for the study of which is given 90 hours, the distribution of which is as follows:

The structure of the	Numbe	Number of credits, hours, of them			Year of study /	Types of
discipline	Total credits /	Auditoriums		ISW	semester	control
_	hour	Lectures	Seminars			
		(hours)	(hours)			
Pharmaceutical	3,0 credits /	10	20	60	Ш year	credit
aspects of drug	90 hours				(5-6 semesters)	
addiction						
Content modules 1						

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:

- a) is based on knowledge of the basics of organic chemistry, normal physiology, pathological physiology, first aid;
- b) 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:

- ability to apply knowledge in practical situations;
- knowledge and understanding of the subject area and understanding of the profession;
- ability to abstract thinking, analysis and synthesis, the ability to learn and master modern knowledge;
- ability to work in a team, interpersonal skills;
- skills of using information and communication technologies;
- ability to evaluate and ensure the quality of work performed;
- ability to conduct research at the appropriate level;
- desire to preserve the environment;

#### special (professional, subject):

- the ability to organize, provide and conduct information among the population about the impact of drug addiction on the human body, its mental behavior;
- ability to test, conduct pharmaceutical research and control methods of drugs that cause addiction;
- ability to know the list of pharmaceutical drugs that cause drug addiction;
- ability to develop methods of control of pharmaceutical substances, solvents and other compounds that cause addiction;
- ability to provide first aid in case of poisoning by pharmaceutical substances;
- ability to plan and organize drug treatment for the population.

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

#### **Competence Matrix**

					responsibility
1	2	3	4	5	6

### **Integral competence**

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.

innovation and is characterized by complexity.					
			General competencie		
1	Ability to apply knowledge in practical situations.	Have specialized conceptual knowledge acquired in the learning process.	Be able to solve complex problems and problems that arise in professional activities.	Clear and unambiguous communication of own conclusions, knowledge and explanations that substantiate them to specialists and non-specialists.	Responsible for making decisions in difficult conditions.
2	Knowledge and understanding of the subject area and understanding of the profession.	Have deep knowledge of the structure of professional activity.	Be able to carry out professional activities that require updating and integration of knowledge.	Ability to effectively form a communication strategy in professional activities.	To be responsible for professional development, ability to further professional training with a high level of autonomy.
3	Ability to abstract thinking, analysis and synthesis, the ability to learn and master modern knowledge.	Know the methods of analysis, synthesis and further modern learning.	Be able to analyze information, make informed decisions, be able to acquire modern knowledge.	Establish appropriate connections to achieve goals.	Be responsible for the timely acquisition of modern knowledge.
4	Ability to work in a team, interpersonal skills.	Know the tactics and strategies of communication, laws and ways of communicative behavior.	Be able to choose communication strategies to ensure effective teamwork.	Use communication strategies and interpersonal skills.	Be responsible for the choice and tactics of communication.
5	Skills in the use of information and communication technologies.	Have deep knowledge in the field of information and communication technologies used in professional activities.	Be able to use information and communication technologies in the professional field, which requires updating and integration of knowledge.	Use information and communication technologies in professional activities.	Be responsible for the development of professional knowledge and skills.

6	Ability to evaluate and ensure the quality of work performed.	Know the methods of evaluating performance indicators.	Be able to ensure quality work.	Establish connections to ensure quality work.	Be responsible for the quality of work.
7	Ability to conduct research at the appropriate level.	Know the components of the health care system, planning and evaluating research.	Search for scientific sources of information; make a choice of methods of scientific research, use methods of mathematical analysis and modeling, theoretical and experimental research in pharmacy.	Use information data from scientific sources.	Be responsible for the development and implementation of planned projects.
8	The pursuit of environmenta l protection.	Know the problems of environmental protection and ways to preserve it.	Be able to form requirements for themselves and others to preserve the environment.	Make proposals to the relevant bodies and institutions on measures to preserve and protect the environment.	Be responsible for the implementation of environmental protection measures within its competence.
		Special (pr	ofessional, subject) co		
1	The ability to organize, provide and inform the population about the impact of addiction on the human body, its mental behavior.	Know the modern requirements for the organization and quality control of medicines in a pharmacy and a pharmaceutical company.	Be able to choose chemical and physico-chemical methods of drug quality analysis.	To substantiate the chosen methods of the analysis of medicines in the conditions of a drugstore and the pharmaceutical enterprise.	Be responsible for the organization, provision and quality control of medicines in a pharmacy and a pharmaceutical company.
2	Ability to test, conduct pharmaceutic al research and control methods of drugs that cause addiction.	Know chemical and instrumental methods of analysis.	Be able to apply chemical and instrumental methods of analysis, conduct biopharmaceutical research to control drugs.	It is reasonable to evaluate the results of chemical, physicochemical and biopharmaceutic al methods in quality control of medicines.	Be responsible for deciding on the evaluation of the results of chemical, physicochemical and biopharmaceutical methods of drug control.
3	Ability to	Know the	Be able to explain	It is reasonable	Be responsible for

	know the list of pharmaceutic al drugs that cause drug addiction.	names of drugs that cause addiction.	to the consumer about the consequences of abuse of certain groups of drugs.	to assess the consequences of substance abuse.	organizing and conducting information among the population about drug intoxication and their harmful effects.
4	Ability to develop methods of control, pharmaceutic al substances, solvents and other compounds that cause addiction.	Know the basics of chromatograph ic, spectral and enzyme-linked immunosorben t assays of rapid determination of drugaddicted substances in urine.	Carry out rapid determination of the main groups of drug-addicted compounds in urine.	Evaluate the results of rapid determination of the main groups of addictive compounds in urine.	Be responsible for the quality of the study.
5	Ability to provide first aid in case of poisoning by drug addicts.	Know the symptoms of drug poisoning.	Be able to provide first aid for drug poisoning.	It is reasonable to assess the threat to human life due to substance abuse.	Be responsible for first aid in case of poisoning.
6	Ability to plan and organize drug treatment for the population.	Know standard procedures for planning and providing assistance.	Be able to justify the sample size, apply methods of statistical analysis, provide results of statistical data processing.	It is reasonable to evaluate the obtained results.	Be responsible for conducting analysis and obtaining reliable and reproducible results.

#### Learning outcomes:

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

#### common

- use the results of independent search of scientific and professional information using modern computer tools, network technologies, databases and knowledge;
- to argue the information for decision-making, to be responsible for them in standard and nonstandard professional situations; adhere to the principles of deontology and ethics in professional activities;
- use methods of assessing performance indicators; identify reserves to increase labor efficiency;
- to analyze the information received as a result of scientific researches, to generalize, systematize and use it in professional activity;
- independently apply methods and means of cognition, learning and self-control to acquire new knowledge and skills.

#### professional

- conducting research, both as part of a group and independently, while implementing special tools and methods of obtaining new knowledge;

- organization, tasks and structure of the narcological service;
- ability to diagnose poisoning caused by drug addicts;
- basics of pharmacological treatment of drug addiction;
- free possession of a list of drugs and components of volatile compounds that cause addiction.
- prevention of drug addiction, its social aspects.

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	Hours			
	Lectur			
	es	Seminars	ISW	Ind.
1	2	3	4	5
Content module 1. Basics of d	rug addicti	on.		
<b>Topic 1.</b> Subject, tasks and objectives of the discipline				
"Pharmaceutical bases of drug addiction". Types of	2	2	4	
addiction. Classification of drug addiction.				
<b>Topic 2.</b> Addiction caused by the abuse of sleeping pills				
(barbituric acid derivatives) and tranquilizers of the	2	2	8	
benzodiazepine series.				
<b>Topic 3.</b> Addictions caused by neuroleptics. Drug				
addiction due to abuse of psychostimulants and	1	2	8	
antidepressants.				
<b>Topic 4.</b> Abuse of cholinolytic drugs and antihistamines				
(cyclodol, atropine, solutan, diphenhydramine, etc.).	1	2	4	
Drug addiction caused by the abuse of synthetic non-	1	2	4	
drug analgesics.				
<b>Topic 5.</b> Abuse of volatile substances. Consequences of	2	4	10	
chronic intoxication with inhalants.		4	10	
<b>Topic 6.</b> Nicotine and caffeine addiction. Symptoms of				
intoxication. Consequences of abuse for the human		2	6	
body.				
<b>Topic 7.</b> Designer drugs. Polydrug addiction and	1	2	8	
political addiction.	1		0	
<b>Topic 8.</b> Addiction complicated by alcoholism.				
Transformation of types of drug addiction and substance	1	2	4	
abuse.				
Current control of <b>module 1</b>		2	4	
Final control of the <b>module 1</b> . Credit for practical skills		2	4	
Total	10	20	60	

## 4. Thematic plan of lectures

No	Торіс	Hours
	Content module 1. Basics of drug addiction.	
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 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
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
	Total	10

## 5. Thematic plan of seminars

No	Торіс			
	Module 1. Basics of drug addiction.			
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
	Total	20

#### **6. Topics of practical classes** – not provided for in the sample curriculum

#### 7. Topics of laboratory classes – not provided for in the sample curriculum

#### 8. Independent students work

No	Topic	Hours
	Module 1. Basics of drug addiction.	
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
	Total	60

#### **9. Individual tasks** are not provided by the sample curriculum

#### 10. 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.

#### 11. Learning 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).

#### 12. 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.

<u>Good ("4")</u>. 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.

<u>Unsatisfactory ("2")</u>. 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.

#### 13. The form of final performance control is learning credit

#### 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	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
scale											1	1	
200-	200	199	198	197	196	195	194	193	192	119	190	189	188
points													
scale													
4-points	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
scale													
200-	187	186	185	184	183	181	180	179	178	177	176	175	174
points													
scale													
4-points	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
scale				1			=						
200-	173	172	171	170	169	168	167	166	165	164	163	162	161
points													
scale													
4-points	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
scale													
200-	160	159	158	17	156	155	154	153	152	151	150	149	148
points													
scale													
4-points	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
scale													
200-	147	146	145	144	143	142	141	140	139	138	137	136	135
points													
scale													
4-points	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
scale													
200-	133	132	131	130	129	128	127	126	125	124	123	121	120
points													
scale													
4-points	s Less than 3												
scale													
200-	Not enough												
points													
scale													

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).

#### 14. Methodical support

- 1. Working program 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.

#### 15. Reference

#### Obligatory:

- 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.
- **16. Information source:** Verstraete A.G.; Mukhdomi T. Clinical Drug Testing https://www.ncbi.nlm.nih.gov/books/NBK557523/