

**AMENDMENTS AND CHANGES TO THE CURRICULUM IN THE EDUCATIONAL DISCIPLINE**  
**«TOXICOLOGICAL CHEMISTRY»**  
for the specialty 1-79 01 08 “Pharmacy”

2021/2022 academic year

Amendments and changes	Basis/Reason
1. Changes have been introduced into the educational discipline curricular chart	Educational Plan for 2021/2022 academic year
2. The following sections have been added to the information and methodological part: <p style="text-align: center;"><b>MAIN FORMS OF SUPERVISED STUDENT INDEPENDENT WORK:</b></p> <ul style="list-style-type: none"> <li>– presentation of reports;</li> <li>– studying topics and problems that have not been discussed at the lectures;</li> <li>– computer testing;</li> <li>– preparation of didactic materials.</li> </ul> Control of supervised student independent work is carried out in the forms of: <ul style="list-style-type: none"> <li>– computer testing;</li> </ul> individual interview.	Educational Plan for 2021/2022 academic year

The curriculum is revised and approved at the department meeting  
pharmaceutical chemistry (protocol # 14 of 24.06.2021)

Acting head of the department  
Pharmaceutical Chemistry

  
N.V.Lishai

APPROVED

Dean of the Medical Faculty  
of International Students  
MD, PhD, Associate professor

  
O.S.Ishutin

## EDUCATIONAL DISCIPLINE CURRICULAR CHART

Section, topic #	Section (topic) name	number of hours			Self-studies	Equipment	Form of control
		lectures	practical ( <i>laboratory or seminars</i> )	supervised self-study			
8 semester							
1	General issues of toxicological chemistry	2	9	1	4	-	interviews, assessment based on role-playing, tests, abstracts, computer tests
1.1	The goals and objectives of the discipline «Toxicological chemistry»	0,5	3	-	1	[1-5]	interviews, assessment based on role-playing, tests, written accounts of laboratory work, computer tests
1.2	Organization of medical forensics in the Republic of Belarus. Introduction to narcology and clinical toxicology	0,5	3	0,5	1	-	interviews, assessment based on role-playing, tests, role-playing based evaluation, computer tests
1.3	Classification of toxic substances	0,5	1	-	1	-	interviews, colloquiums, tests, control

							questioning, written accounts of laboratory work, computer tests
1.4	Chemical toxicology analysis methodology	0,5	2	0,5	1		
<b>2</b>	<b>Fundamentals of biochemical toxicology</b>	<b>4</b>	<b>3</b>	<b>1,5</b>	<b>3</b>	-	interviews, assessment based on role-playing, tests, abstracts, role-playing based evaluation, computer tests
2.1	The intake and distribution of toxic substances in the human body	1	1	0,5	1	[1-5]	interviews, assessment based on role-playing, tests, role-playing based evaluation, written accounts of laboratory work, computer tests
2.2	Biotransformation of foreign compounds in the body. The main ways of biotransformation	2	1	0,5	1	-	interviews, colloquiums, tests, control questioning, computer tests
2.3	Metabolites and toxicity. Isolation of foreign compounds and their metabolites from the human body	1	1	0,5	1		
<b>3</b>	<b>Analytical toxicology of the main groups of xenobiotics</b>	<b>32</b>	<b>102</b>	<b>8,5</b>	<b>37</b>	-	interviews, assessment based on role-playing, tests, computer tests
3.1	Substances isolated from biological material by mineralization	6	21	1,5	15	-	interviews, assessment based on role-playing,

							tests, abstracts, computer tests
3.1.1	Ecology of the environment and the prevalence of poisoning by compounds of heavy metals and arsenic. General characteristics of the group	2	3	0,5	2	[1-5]	interviews, assessment based on role-playing, tests, written accounts of laboratory work, role-playing based evaluation, computer tests
3.1.2	Methods of mineralization, removal of oxidizing agents	2	3	0,5	2	[1-5]	interviews, assessment based on role-playing, tests, written accounts of laboratory work, computer tests
3.1.3	Methods for the detection and quantification of «metallic» poisons	2	-	0,5		[1-5]	interviews, assessment based on role-playing, tests, written accounts of laboratory work, computer tests
3.1.4	Mineralizate analysis by the systemic method	-	3	-	3	[1-5]	interviews, assessment based on role-playing, tests, written accounts of laboratory work, computer tests
3.1.5	Mineralizate analysis by fractional method	-	6	-	3	[1-5]	interviews, assessment based on role-playing, tests, written

							accounts of laboratory work, computer tests
3.1.6	Determination of mercury in biological material	-	3	-	2	-	interviews, colloquiums, tests, control questioning, computer tests
3.1.7	Final lesson on the topic «Metal Poisons»	-	3	-	3		
<b>3.2</b>	<b>«Flying» poisons</b>					[1-5]	interviews, assessment based on role-playing, tests, abstracts, role-playing based evaluation, computer tests
		<b>6</b>	<b>18</b>	<b>1,5</b>	<b>19</b>		
3.2.1	A group of substances isolated by distillation. Scheme of chemical and toxicological studies of «flying» poisons					[1-5]	interviews, assessment based on role-playing, tests, written accounts of laboratory work, computer tests
		2	3	0,5	3		
3.2.2	Chemical method for the analysis of distillate. Qualitative detection and quantification of «flying» poisons					[1-5]	interviews, assessment based on role-playing, tests, written accounts of laboratory work, computer tests
		2	6	0,5	6		
3.2.3	Gas chromatographic definition of «flying» poisons. Examination of alcohol intoxication. Quantification of aliphatic alcohols						interviews, colloquiums, tests, control questioning, computer tests
		2	6	0,5	4	-	
3.2.4	Final lesson on the theme «Flying Poisons»	-	3	-	6	[1-5]	interviews, oral

							credits, tests, written accounts of laboratory work, final tests, credit, computer tests
<b>3.3</b>	<b>Substances defined directly in biological material</b>	<b>2</b>	<b>3</b>	<b>0,5</b>	<b>3</b>	<b>9 semester</b>	
<b>9 semester</b>							
<b>3.4</b>	<b>Modern physicochemical methods used in chemical toxicological analysis</b>					[1-5]	interviews, assessment based on role-playing, tests, abstracts, computer tests
		<b>5</b>	<b>9</b>	<b>1,5</b>	<b>8</b>		
3.4.1	Gas chromatography with mass spectrometric detection					-	interviews, assessment based on role-playing, tests, role-playing based evaluation, computer tests
		2	3	0,5	3		
3.4.2	High Performance Liquid Chromatography					-	interviews, assessment based on role-playing, tests, written accounts of laboratory work, computer tests
		1	-	0,5	3		
3.4.3	Biological material. Sampling for research. Methods of isolating the purification and concentration of toxic substances from biological material					-	interviews, colloquiums, tests, control questioning, computer tests
		1	3	0,5	1		
3.4.4	Chemical-toxicological analysis of substances by the method of immunochemistry (IHC)					[1-5]	interviews, assessment based on role-playing, tests, abstracts, computer tests
		1	3	-	1		
<b>3.5</b>	<b>Substances isolated from biological material by water</b>	<b>0,5</b>	<b>2</b>	<b>-</b>	<b>2</b>	[1-5]	interviews,

	<b>extraction</b>						assessment based on role-playing, tests, abstracts, computer tests
3.6	<b>Substances requiring private isolation methods</b>	<b>0,5</b>	<b>1</b>	<b>0,5</b>	<b>2</b>		
3.7	<b>Substances isolated from biological material by polar solvents</b>					[1-5]	interviews, assessment based on role-playing, tests, written accounts of laboratory work, computer tests
		<b>10</b>	<b>51</b>	<b>3,5</b>	<b>60</b>		
3.7.1	Alkaloids. General characteristics					-	interviews, assessment based on role-playing, tests, abstracts, computer tests
		1	3	0,5	4		
3.7.2	Characterization, toxicological significance, detection and quantification of substances extracted with organic solvents from an acidic medium					[1-5]	interviews, assessment based on role-playing, tests, written accounts of laboratory work, computer tests
		1	3	0,5			
3.7.3	General and private methods of isolating substances extracted with organic solvents from acidic medium					[1-5]	interviews, assessment based on role-playing, tests, written accounts of laboratory work, computer tests
		1	3	0,5	3		
3.7.4	Quantitative determination of barbiturates by the method of differentiated spectrophotometry					[1-5]	interviews, assessment based on role-playing, tests, computer tests
		0,5	3	-	3		

3.7.5	Final lesson on the topic «Detection and quantification of substances extracted with organic solvents from an acidic environment»					[1-5]	interviews, assessment based on role-playing, tests, computer tests
		-	3	-	3		
3.7.6	Characterization, chemical-toxicological analysis of substances of a weakly basic nature					[1-5]	interviews, assessment based on role-playing, tests, written accounts of laboratory work, computer tests
		0,5	6		10		
3.7.7	Characterization, chemical-toxicological analysis of substances extracted with organic solvents from an alkaline medium					[1-5]	interviews, assessment based on role-playing, tests, computer tests
		2	-	0,5			
3.7.8	General and private methods of isolating substances extracted with organic solvents from an alkaline medium					[1-5]	interviews, assessment based on role-playing, tests, written accounts of laboratory work, computer tests
		-	3	-	5		
3.7.9	The procedure for performing acidic, alkaline hydrolysis using the example of isolation of 1,4-benzodiazepine derivatives					[1-5]	interviews, assessment based on role-playing, tests, written accounts of laboratory work, computer tests
		0,5	3		3		
3.7.10	Chemical-toxicological analysis of potent and psychotropic substances					[1-5]	interviews, assessment based on role-playing, tests, written accounts of
		0,5	3		3		



							laboratory work, computer tests
3.7.1 1	Chemical toxicological analysis of narcotic substances					[1-5]	interviews, assessment based on role-playing, tests, written accounts of laboratory work, computer tests
		2	6	0,5	10		
3.7.1 2	TLC - screening of drugs					[1-5]	interviews, assessment based on role-playing, tests, written accounts of laboratory work, computer tests
		0,5	6	0,5	6		
3.7.1 3	Methods for the quantitative determination of drugs					-	interviews, colloquiums, tests, control questioning, computer tests
		0,5	3	0,5	7		
3.7.1 4	Final lesson on the topic «Detection and quantification of substances extracted with organic solvents from an alkaline medium»					[1-5]	interviews, colloquiums, tests, control questioning, abstracts, , written accounts of laboratory work final tests, examination, computer tests
		-	3	-	3		
<b>3.8</b>	<b>Substances isolated from biological material by non-polar solvents (pesticides)</b>	<b>2</b>	<b>3</b>	<b>0,5</b>	<b>2</b>		