OŃTÚSTIK-QAZAQSTAN 📌	
MEDISINA (SKMA) MEDICAL	
«Оңтүстік Қазақстан медицина академиясы» АҚ 🏹 🖓 АО «Южно-Казахстанская медиц	инская академия»
Department of pharmaceutical and toxicological chemistry	044-55/
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"Methods and equipment for pharmaceutical analysis"	

Department of pharmaceutical and toxicological chemistry Working curriculum of the discipline (Syllabus) Educational program 6B07201 "Pharmaceutical manufacturing technology "

MOFA 4201
Methods and equipment for pharmaceutical analysis
Inorganic chemistry, organic chemistry
Professional activities
CS
2024-2025
4
VII
120 hours/ 4 credits
EC

-calbo SOUTH KAZAKHSTAN SKMA MEDICAL ACADEMY

АО «Южно-Казахстанская медицинская академия»

Department of Pharmaceutical and Toxicological Chemistry Working curriculum for the discipline

JL,

"Methods and equipment for pharmaceutical analysis"

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Course description (maximum 50 words) 2.

«Оңтүстік Қазақстан медицина академиясы» АҚ

Physicochemical (Instrumental) Methods for Pharmaceutical Analysis of Drugs. Principles and conditions for conducting work on equipment (instruments), sample preparation for analysis, interpretation of the obtained results of instrumental analysis. Refractometry, polarimetry. Methods based on the absorption of electromagnetic radiation: in the UV, visible (photoelectric colorimetry (FEC)), and IR regions. Chromatographic methods.

3.	Summative assessment form		
3.1	Testing	3.5	Coursework
3.2	Writing	3.6	Essay
3.3	Oral ≪	3.7	Project
3.4	Assessment of practical skills	3.8	Other (specify)
4.	Discipline objectives		
]	Fraining in the most important instr	rumental anal	ysis methods and work on modern
pharm	aceutical equipment necessary to ens	ure the qualit	y and safety of drugs.
5.	Final learning outcomes (LO disc	iplines)	
LO1	Demonstrates knowledge and up	nderstanding	in the area of study, based on
	advanced knowledge in this area:		
	- demonstrates knowledge and under	rstanding of th	e purpose of chemical-technological
	processes and the implementation	of pharmaceu	tical analysis of biologically active
	compounds on modern equipment.		
LO2.	Apply knowledge and understand	ing at a profe	ssional level, formulate arguments
	and solve problems in the studied	area:	
	- apply the theoretical founda	tions of gene	eral chemical technology to obtain
	chemical substances, conduct quality	tative and qua	ntitative analysis, own the technique
	of performing on modern analytical	l equipment fo	or pharmaceutical analysis of drugs;
	- form arguments and solve pro	blems in the	studied area, based on knowledge in
	the field of natural sciences and	on the skills	of acquired new knowledge in the
	disciplines of the module;		
	- formulate arguments and s	olve problem	as of cause-and-effect relationship
	between the actual result of synthe	sis and the re	quirements of regulatory documents
	for the quality of the substance at the	ne stages of ol	otaining, production.
LO3.	Collects and interprets information	on to form juc	Igments taking into account social,
	ethical and scientific consideration	ns:	
	- interprets the choice of modern	equipment an	nd devices based on the physical and
	chemical properties of the compoun	ds being stud	ied, analyzes and evaluates the tasks
	set, finds something new in solving	problems in t	he field of professional activity.
LO4	Communicates information, ideas	s, and proble	m solutions to both specialists and
	non-specialists:		

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	- communicat	es information, ideas, and problem solutions to specialists in						
	conducting chemic	cal-technological processes and documenting the results obtained,						
	as well as to non-s	pecialists on the quality of medicines.						
LO5	Learning skills required for independent continuation of learning in the studied							
	area:							
	- has the skills to	search and analyze information, acquire new knowledge necessary						
	for professional ac	essional activity in the field of pharmaceutical production;						
	- interprets the	results of own laboratory work on chemical and technological						
	processes, method	s and equipment of pharmaceutical analysis, gives a conclusion in						
	accordance with	the requirements of regulatory documents on the quality of						
	medicines.							
LO6	Knows research a	and academic writing techniques and applies them to the field of						
	study:							
	knows method	s of scientific research, methodological foundations of scientific						
	research, modern	problems of chemical production, methods of theoretical and						
	empirical researc	ch, methodology for organizing and conducting scientific						
1.07	experiments, rules	of academic writing and presentation of research results.						
LO/	Applies knowled	ge and understanding of facts, phenomena, theories and						
	complex relations	ships between them in the field of study:						
	knows and une	derstands the relationship between the parameters of CTP and the						
	physical, chemic	al properties and methods of obtaining biologically active						
	compounds;							
	carries out all	types of CTP biologically active compounds and qualitative and						
	quantitative analyz	zes of the product using modern equipment.						
LO8	Understands the	importance of principles and a culture of academic integrity						
	understands th	e principles and culture of academic integrity in the educational						
	process, expressin	g the honesty of students when performing all assessment work in						
	the process of ma	stering theoretical and practical material in the disciplines of this						
5 1	Course I O	The learning outcomes of the FP, which are related to the						
5.1		learning outcomes of the course						
	LO 1	LO1 LO2 LO4						
	LO 2	LO4, LO10						
	LO 3	LO1. LO2. LO4						
	LO 4	L08, L010						
	LO 5	LO4, LO10						
	LO 6	LO1, LO8, LO11						
	LO 7	LO1. LO2. LO3						

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АКАDEMIASY «Оңтүстік Қазақстан медицина академиясы» АҚ

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	LO 8	LO10					
6.	Details of the co	urse					
6.1	Location (building, auditorium): main building, auditoriums: 101B-105B						
	Contact Information						
	South Kazakhs	nstan Medical Academy, Department of Pharmaceutical and					
	Toxicological Cl	nemistry. Al-	Farabi Square, b	ouilding	1. Tel	ephone 8 (7252) 408 222,
	internal 266.	-	_	_		-	
6.2	Number of hour	s Lectures	Practical	Lab		STIW	SIW
			lessons	lesso	n		
		10	-	30		12	68
7.	Information abo	out teachers					
N⁰	Ф.И.С).	Degrees	and title		En	nail address
1.	Ordabaeva Saule Kutymoyna		professor, pharm	s.d.,		ordabaeva	@mail.ru
2.	Sopbekova Anara		ass. prof, c. of p	harm. s.		anarkulso	pbekova@mail.ru
2	Onlabekovna	_1	and prof a of an			anilhaltar	a alimanal @mail.r
5.	Dzhienbekovna	11	ass.prof., c. of engin. s. <u>asilbekova_akmarai@mail.r</u> u				
4.	Kadeeva Mansia Sa	idilovna	dilovna ass. prof, c. of pharm. s. bc_kadeyeva@mai			eva@mail.ru	
5.	Tursubekova Bayar	1	ass. Prof., c. of pl	narm. s.		baian.69@	<u>@mail</u> .ru
	Izteleuovna		• . •			1 20	15011
6.	Karakulova Aizhan Shirinbekovna		senior teacher, ma	aster of		ayznan2015@0k.tu	
7.	Dzhanaralieva Kak	ha Saidovna	senior teacher			mansur5	62@ mail.ru
8.	Thematic plan						
Week	Topic name	Sui	nmary	Cours	Nu	Forms /	Forms /
				e LO	mbe r of	Methods /learning	assessment
					hou	technologi	memous
					rs	es	
1	Lecture. Topic:	Regulatory le	egal acts in the	LO1,	1	thematic	feedback
	Introduction.	field of sta	andardization of	LO5,			
	State principles	medicines.	The system of	LO6			
	regulating the	the Republic of	of Kazakhstan and				
	quality of	standardizatio	n of medicines.				
	medicines.						
	Laboratory	Analysis of m	edicinal products	LO2,	2	work in	laboratory
	lesson. Topic:	by spectropho	tometric method	LO3,		pairs	work
	Analysis of	in the UV regi	ion.	LUS			protection:
	products by						preparedness
	spectrophotometri						2. performing
	- I						laboratory

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	c method in the					work;
	UV region.					3. protocol
			LO1	/2		formatting
	STIW/SIW Task	Standardization system in	LOI,	-/3	preparatio	assessment of
	of the SIW: State	healthcare of the Republic of	LO3,		n and	the abstract/
	principles and	Kazaknstan. Normative	LO4,		derense or	project
	provisions	documentation (ND) governing	LUS		adstracts,	monitoring
	governing the	of medicines. State			review of	
	quality of	Di medicines: State			abstracts,	
	medicines.	of Kazakhstan International			in the	
		Pharmacopoeia of the WHO			Δnti_{-}	
		Furopean Pharmacopoeia			nlagiat	
		Eurasian Economic			University	
		Community Pharmacopoeia.			system/pro	
		Quality assurance of medicines.			ject work	
		Control and permit system.			5	
		Quality assurance system of				
		medicines according to				
		international standards.				
2	Lecture. Topic:	Rules for drafting regulatory	LO1,	1	thematic	feedback
	Pharmacopoeial	and technical documents on	LO5,			
	testing methods	quality control and safety of	LO6			
	for individual	medicines. State				
	quality mulcators.	of Kazakhstan				
	Laboratory	Analysis of medicinal products	LO2.	2	work in	Defense of
	lesson. Topic:	by spectrophotometric method	LO3,		small	laboratory
	Analysis of	in the UV region.	LO5		groups	work:
	medicinal				0 1	1. theoretical
	products by					preparation;
	spectrophotometri					2. performance
	c method in the					of laboratory
	UV region.					work;
						3. preparation
	STIW/SIW Tack	Pharmaconogial testing	I O1	1/4	nreneratio	of the protocol
	of the SIW	methods for individual quality	LO1,	1/4	n and	the abstract/
	General	indicators. Physical properties	LO3, LO4		defense of	project
	principles and	and constants used to identify			abstracts.	monitoring
	methods of drug	drugs: appearance, odor,			review of	2
	identification.	solubility, melting point,			abstracts,	
	Identification of	boiling point, solidification,			checking	
	drugs by physical	relative density, optical			in the	
	properties and	rotation, viscosity, etc.			Anti-	
	constants.	Pharmacopoeial methods of			plagiat.	
		analysis used to identify drugs.			University	



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					system/ project work	
3	Lecture. Topic: Methods of photometry in the ultraviolet and visible spectral regions.	Instrumental methods of testing for individual quality indicators. Spectrophotometric methods in pharmaceutical analysis. Spectrophotometry in the UV and visible region. Equipment for spectrophotometric analysis.	LO1, LO5, LO6	1	thematic	feedback
	Laboratory lesson. Topic: Analysis of medicinal products by spectrophotometri c method in the visible region.	Analysis of medicinal products by spectrophotometric method in the visible region.	LO2, LO3, LO5	2	work in small groups	Defense of laboratory work: 1. theoretical preparation; 2. performance of laboratory work; 3. preparation of the protocol
	STIW/SIW Task of the SIW: Methods based on radiation emission: atomic absorption spectrometry, fluorimetry.	Pharmacopoeial methods of testing for individual quality indicators. Methods based on radiation emission: atomic adsorption spectrometry, fluorimetry. Methods based on radiation emission: atomic adsorption spectrometry, fluorimetry in pharmaceutical analysis. Equipment for adsorption spectrometry, fluorimetry.	L01, L03, L04, L05	1/4	preparatio n and defense of abstracts, review of abstracts, checking in the Anti- plagiat. University system/ project work	assessment of the abstract/ project monitoring
4	Lecture. Topic: Methods of photometry in the ultraviolet and visible spectral regions.	Instrumental methods of testing for individual quality indicators. Spectrophotometric methods in pharmaceutical analysis. Spectrophotometry in the UV and visible region. Equipment for spectrophotometric analysis.	LO1, LO5, LO6	1	thematic	feedback
	Laboratory lesson. Topic: Analysis of medicinal	Analysis of medicinal products by spectrophotometric method in the visible region.	LO2, LO3, LO5	2	work in small groups	Defense of laboratory work: 1. theoretical

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	products by spectrophotometri c method in the visible region.					preparation; 2. performance of laboratory work; 3. preparation of the protocol
	STIW/SIW Task of the SIW: Methods based on the absorption of electromagnetic radiation: nephelometry	Pharmacopoeial methods of testing for individual quality indicators. Methods based on the absorption of electromagnetic radiation. Methods based on the absorption of electromagnetic radiation in pharmaceutical analysis. Equipment for conducting electromagnetic radiation.	LO1, LO3, LO4, LO5	1/3	presentatio n, review of presentatio n/project work	presentation evaluation/proj ect monitoring
5	Lecture. Topic: Spectroscopy methods in drug analysis (IR, Mass, NMR)	Application of IR spectroscopy methods in determining the authenticity of drugs. Application of IR, Mass, NMR spectroscopy in pharmaceutical analysis. Near IR spectroscopy. Theoretical foundations of methods. Basic concepts. Spectroscopy methods in IR, Mass, NMR. Application of IR, Mass, NMR spectroscopy methods.	LO1, LO5, LO6	1	thematic	feedback
	Laboratory lesson. Topic: Analysis of medicinal products by photoelectrocolor imetric method.	Analysis of medicinal products by photoelectrocolorimetric method.	LO2, LO3, LO5	2	work in small groups	Defense of laboratory work: 1. theoretical preparation; 2. performance of laboratory work; 3. preparation of the protocol
	STIW/SIW Task of the SIW: Methods based on the use of a magnetic field: NMR spectroscopy.	Instrumental methods of testing for individual quality indicators. Methods based on the use of a magnetic field: NMR spectroscopy. Methods based on the use of a magnetic field in pharmaceutical	LO1, LO3, LO4	-/4	preparatio n and defense of abstracts, review of abstracts, checking in the	assessment of the abstract/ project monitoring

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6	Lecture. Topic: Chromatographic methods of drug analysis. Classification.	analysis. Equipment for conducting NMR spectroscopy. Chromatographic methods in pharmaceutical analysis. Classification. Gas chromatography in quality control of medicines. Equipment for gas chromatography. Liquid chromatography in quality control of medicines.	LO1, LO5, LO6	1	Anti- plagiat. University system/ project work thematic	feedback
	Laboratory lesson. Topic: Analysis of medicinal products by refractometric method.	Analysis of medicinal products by refractometric method	LO2, LO3, LO5	2	work in small groups	Defense of laboratory work: 1. theoretical preparation; 2. performance of laboratory work; 3. preparation of the protocol
	STIW/SIW Task of the SIW: Methods based on the use of a magnetic field: PMR spectroscopy.	Instrumental methods of testing for individual quality indicators. Methods based on the use of a magnetic field: PMR spectroscopy. Methods based on the use of a magnetic field in pharmaceutical analysis. Equipment for conducting PMR spectroscopy.	LO1, LO3, LO4	1/4	preparatio n and defense of abstracts, review of abstracts, checking in the Anti- plagiat. University system/ project work	assessment of the abstract/ project monitoring
7	Lecture. Topic: Chromatographic methods of drug analysis. Classification.	Chromatographicmethodsinpharmaceuticalanalysis.Classification.Gaschromatographyinqualitycontrolofmedicines.Equipmentforgaschromatography.Liquid	LO1, LO5, LO6	1	thematic	feedback

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		chromatography in quality control of medicines.				
	Laboratory lesson. Topic: Analysis of medicinal products by refractometric method.	Analysis of medicinal products by refractometric method	LO2, LO3, LO5	2	work in small groups	Defense of laboratory work: 1. theoretical preparation; 2. performance of laboratory work; 3. preparation of the protocol
	STIW/SIW Task of the SIW: Magnetic field based methods: mass spectroscopy.	Instrumental methods of testing for individual quality indicators. Methods based on the use of a magnetic field: mass spectroscopy. Methods based on the use of a magnetic field in pharmaceutical analysis. Equipment for conducting mass spectroscopy.	LO1, LO3, LO4, LO5	1/3	presentatio n, review of presentatio n/project work	presentation evaluation/proj ect monitoring
8	Lecture. Topic: Principles of plane and column chromatography. Application area. Advantages and disadvantages.	Principles of planar and column chromatography. Application area. Advantages and disadvantages.	LO1, LO5, LO6	1	thematic	feedback
	Laboratory lesson. Topic: Analysis of medicinal products by thin layer chromatography.	Analysis of medicinal products by thin layer chromatography	LO2, LO3, LO5	2	work in small groups	Defense of laboratory work: 1. theoretical preparation; 2. performance of laboratory work; 3. preparation of the protocol

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9	STIW/SIW Task of the SIW: Midterm control - 1 Lecture. Topic: Principles of Plane and Column Chromatography. Application Area.	Topics 1-7 weeks . Principles of Plane and Column Chromatography. Application Area. Advantages and Disadvantages	L01, L03, L04	1/4	testing/int erim report of project work thematic	Evaluation/def ense of the interim report of the project work feedback
	Advantages and Disadvantages. Laboratory lesson. Topic: Analysis of medicinal products by thin layer chromatography.	Analysis of medicinal products by thin layer chromatography	LO2, LO3, LO5	2	work in pairs	Defense of laboratory work: 1. theoretical preparation; 2. performance of laboratory work; 3. preparation of the protocol
	STIW/SIW Task of the SIW: Optical methods of analysis: polarimetry	Instrumental methods of testing for individual quality indicators. Optical methods of analysis: polarimetry. Optical methods of research in pharmaceutical analysis. Equipment for conducting polarimetry.	LO1, LO3, LO4, LO5	-/4	preparatio n and defense of abstracts, review of abstracts, checking in the Anti- plagiat. University system/ project work	assessment of the abstract/ project monitoring
10 Lecture. Topic: Pharmacopoeial methods for testing dosage forms according to the parameters "dissolution", "disintegration"		Instrumental methods for testing solid dosage forms. Validation of the methods of the "Dissolution" test. Disintegration test of solid dosage forms. Strength and abrasion test of solid dosage forms. Validation characteristics and	L01, L05, L06	1	thematic	feedback

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and "wearability", etc.	requirements.				
Laboratory lesson. Topic: Analysis of medicinal products by high performance liquid chromatography.	Analysis of medicinal products by high performance liquid chromatography	LO2, LO3, LO5	2	work in pairs	Defense of laboratory work: 1. theoretical preparation; 2. performance of laboratory work; 3. preparation of the protocol
STIW/SIW Task of the SIW: Theoretical foundations of gas chromatography. Application of gas chromatography in drug analysis.	Theoretical foundations of gas chromatography. Application of gas chromatography in drug analysis. Equipment for gas chromatography in pharmaceutical analysis.	LO1, LO3, LO4, LO5	1/3	presentatio n, review of presentatio n/ project work	presentation evaluation/proj ect monitoring
11 Laboratory lesson. Topic: Analysis of medicinal products by high performance liquid chromatography.	Analysis of medicinal products by high performance liquid chromatography	LO2, LO3, LO5	2	work in pairs	Defense of laboratory work: 1. theoretical preparation; 2. performance of laboratory work; 3. preparation of the protocol
STIW/SIW Task of the SIW: Theoretical foundations of liquid chromatography. Application of liquid chromatography in drug analysis.	Theoretical foundations of liquid chromatography. Application of liquid chromatography in drug analysis. Equipment for liquid chromatography in pharmaceutical analysis.	LO1, LO3, LO4, LO5	1/4	presentatio n, review of presentatio n/ project work	presentation evaluation/proj ect monitoring

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АСАДЕМҮ АО «Южно-Казахстанская медицинская академия»



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тан медицина академиясы» Ак УУ АО «Южно-Каза Department of Pharmaceutical and Toxicological Chemistry

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12	Laboratory lesson. Topic: Analysis of dosage forms for the dissolution test.	Regulatory documents on quality control of tableted medicinal products. Specifications of quality of tableted medicinal products. Testing of tablets in accordance with the requirements of the State Pharmacopoeia of the Republic of Kazakhstan in sections of regulatory documents: dissolution.	LO2, LO3, LO5	2	work in small groups	Defense of laboratory work: 1. theoretical preparation; 2. performance of laboratory work; 3. preparation of the protocol
	STIW/SIW Task of the SIW: Electrochemical methods of analysis: potentiometry. Potentiometric titration.	Electrochemical methods of analysis: potentiometry. Potentiometric titration. Equipment for conducting electrochemical research methods in pharmaceutical analysis.	LO1, LO3, LO4	1/4	presentatio n, review of presentatio n/ project work	presentation evaluation/proj ect monitoring
13	Laboratory lesson. Topic: Analysis of dosage forms for the dissolution test.	Regulatory documents on quality control of tableted medicinal products. Specifications of quality of tableted medicinal products. Testing of tablets in accordance with the requirements of the State Pharmacopoeia of the Republic of Kazakhstan for sections of regulatory documents: dissolution.	LO2, LO3, LO5	2	work in small groups	Defense of laboratory work: 1. theoretical preparation; 2. performance of laboratory work; 3. preparation of the protocol
	STIW/SIW Task of the SIW: Electrochemical methods of analysis: anodic and cathodic polarography.	Electrochemical methods of analysis: anodic and cathodic polarography. Equipment for conducting electrochemical research methods in pharmaceutical analysis.	LO1, LO3, LO4, LO5	1/3	presentatio n, review of presentatio n/ project work	presentation evaluation/proj ect monitoring
14	Laboratory lesson. Topic: Analysis of dosage forms for the "disintegration" and "wearability" tests.	Regulatory documents on quality control of tableted medicinal products. Specifications of quality of tableted medicinal products. Testing of tablets in accordance with the requirements of the State Pharmacopoeia of the Republic of Kazakhstan in sections of regulatory	LO2, LO3, LO5	2	work in pairs	Defense of laboratory work: 1. theoretical preparation; 2. performance of laboratory work; 3. preparation of the protocol

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		documents: abrasion, resistance to crushing, disintegration, dissolution.					
	STIW/SIW Task of the SIW: Electrochemical methods of analysis: anodic and cathodic polarography.	Electrochemical methods of analysis: anodic and cathodic polarography. Equipment for conducting electrochemical research methods in pharmaceutical analysis.	LO1, LO3, LO4, LO5	1/4	preparatio n and defense of abstracts, review of abstracts, checking in the Anti- plagiat. University system/ project work	assessment of the abstract/ project monitoring	
15	Laboratory lesson. Topic: Analysis of dosage forms for the "disintegration" and "wearability" tests.	Regulatory documents on quality control of tableted medicinal products. Specifications of quality of tableted medicinal products. Testing of tablets in accordance with the requirements of the State Pharmacopoeia of the Republic of Kazakhstan in sections of regulatory documents: abrasion, resistance to crushing, disintegration, dissolution.	LO2, LO3, LO5	2	work in pairs	Defense of laboratory work: 1. theoretical preparation; 2. performance of laboratory work; 3. preparation of the protocol	
	STIW/SIW Task of the SIW: Midterm control - 2	Topics 8-15 weeks .	LO1, LO3, LO4	1/5	testing/int erim report of project work	Evaluation/def ense of the interim report of the project work	
	Preparation and im	plementation of interim assessmen	nt 	ta 41a a	12	and in the a	
	methodological rec	ommendations for SIW	udents' work is carried out according to the criteria specified in the endations for SIW				
9	Methods of lear	ning and evaluation	ng and evaluation				
9.1	Lectures	Thematic lectures in the	Thematic lectures in the form of presentations.				
9.2	Laboratory lesson	Laboratory lessons: wo	Laboratory lessons: work in small groups, work in pairs.				
9.3	51W/511W	Antiplagiat. VUZ syst review of abstracts, ci presentation, review of	em; prej hecking	s, revie paration in the ntation.	n and defen Antiplagiat In case of	se of abstracts, . VUZ system; f project work,	

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MEDISINA (SKMA) MEDICAL					
AKADEMIASY (, 1) ACADEMY					
«Оңтүстік Қазақстан медицина академиясы» АҚ 🏹 АО «Южно-Казахстанская медицин	ская академия»				
Department of Pharmaceutical and Toxicological Chemistry					
Working curriculum for the discipline	14 page. from				
"Methods and equipment for pharmaceutical analysis"					

		studer report	students submit an interim report after testing in RK-1, and a full report on the project in week 15.			
9.3.1	Project topics1. Development of spectral methods for drug analysis.2. Development of shrometographic methods for drug analysis.					
		2. Dev	velopment of chron	natographic methods	s for drug analysis.	
		3. Dev	velopment of photo	metric methods for o	drug analysis.	
9.4	Midterm controlMidterm assessment is conducted in 2 stages: testing/oral survey.					
		In case of project work, students submit an interim report after				
		testing	g in RK-1, and a fu	ll report on the proje	ect in week 15.	
10.	Evaluation	criteria				
10.1 Cr	iteria for asses	sing the learning ou	tcomes of the discip	line		
	N C		-			
JNºLO	Name of learning outcomes	Unsatisfactory	Satisfactory	Good	Excellent	

OŃTÚSTIK-	QAZAQSTAN
	MEDISINA

АКАDEMIASY «Оңтүстік Қазақстан медицина академиясы» АҚ



SOUTH KAZAKHSTAN **MEDICAL**

АСАДЕМҮ АО «Южно-Казахстанская медицинская академия»

Department of Pharmaceutical and Toxicological Chemistry

Working curriculum for the discipline

"Methods and equipment for pharmaceutical analysis"

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LO1	Demonstrates	- Demonstrates minimum	• -Demonstrates partial	-Demonstrates complete	-Demonstrates exceptional
	knowledge and	knowledge and	knowledge and	knowledge and understanding	knowledge and understanding of
	understanding in the	organizational lagal and	understanding of the	of the organizational, legal,	methodological foundations for
	subject area, based on	methodological	organizational, legal, and	foundations for conducting all	anduating all types of
	advanced knowledge	foundations for	foundations for	tupos of pharmacoutical	conducting an types of
	in the field:-	conducting all types of	conducting all types of	analysis to control the quality	control the quality of medicinal
	demonstrates	pharmaceutical analysis to	pharmaceutical analysis	of medicinal substances and	substances and finished dosage
	knowledge and	control the quality of	to control the quality of	finished dosage forms at the	forms at the stages of
	understanding of the	medicinal substances and	medicinal substances and	stages of development, receipt.	development, receipt, storage.
	nurpose of chemical-	finished dosage forms at	finished dosage forms at	storage, and use;	and use;
	technological processes	the stages of development,	the stages of	-Demonstrates complete	-Demonstrates exceptional
	and the implementation	receipt, storage, and use;	development, receipt,	knowledge and understanding	knowledge and understanding in
	and the implementation	- Demonstrates minimum	storage, and use;	in the selection of appropriate	the selection of appropriate
		knowledge and	 -Demonstrates partial 	chemical and physicochemical	chemical and physicochemical
	analysis of biologically	understanding in the	knowledge and	methods for identification,	methods for identification, purity
	active compounds on	selection of appropriate	understanding in	purity analysis, and	analysis, and quantitative
	modern equipment.	chemical and	choosing the appropriate	quantitative determination of	determination of medicinal
		physicochemical methods	chemical and	drugs depending on the	products depending on the
		for identification, purity	physicochemical methods	physicochemical properties	physicochemical properties and
		analysis, and quantitative	for identification, purity	and type of dosage form.	type of dosage form;
		determination of medicinal	analysis, and quantitative	-Independently masters the	-Fluently uses pharmacopoeial
		iustification without	medicinal products	and non pharmacopoeial	and non-pharmacopetal analysis
		Performs pharmacopoeial	without justification	and non-pharmacopetar	nhemous and conducts
		and non-pharmacopeial	Bartially proficient in	pharmaceutical analysis of	medicinal products using
		analysis methods and	the methods of	drugs using chemical and	chemical and physicochemical
		conducts pharmaceutical	pharmacopoeial and pop-	various physicochemical	methods and obtains exceptional
		analysis for medicinal	pharmacopeial analysis	methods of analysis and	results.
		products using chemical and	and conducts	obtains exceptional results.	-Gives a substantiated conclusion
		various physicochemical	pharmaceutical analysis	-Interprets the results of his	on the quality of medicinal
		methods of analysis under	of medicinal products	own laboratory work on	products in accordance with the
		the guidance of a teacher.	using chemical and	pharmaceutical analysis of	requirements of regulatory
		- Provides an incomplete	physicochemical methods	drugs depending on the	documents;
		conclusion on the quality of	of analysis under the	physicochemical properties	-Independently draws up
		medicinal products in	guidance of a teacher.	and type of dosage form;	protocols in accordance with the
		accordance with the	 -Interprets the results of 	• Gives the correct conclusion	established format: they are
		requirements of regulatory	his own laboratory work	on the quality of drugs in	written correctly and
		documents;	on pharmaceutical	accordance with the	consistently, all calculation
		- Draws up protocols not in	analysis of medicinal	requirements of regulatory	formulas and results of
		accordance with the	products without	documents;	quantitative determination are
		established format, they are	justification;	-Draws up protocols in	provided, expressed in units of
		inconsistent coloulation	• -Gives a partial	accordance with the	identification and purity of
		formulas and results of	of modicinal products in	written neatly and	medicinal products are
		quantitative determination	accordance with the	competently all calculation	accompanied by the chemistry of
		are not provided units of	requirements of	formulas and results of	reactions. In the protocols, all
		measurement are not	regulatory documents:	quantitative determination are	quality indicators are
		provided; reactions of	 Draws up protocols in 	provided, expressed in units of	accompanied by drawings and
		identification and purity of	accordance with the	measurement; reactions of	illustrations based on the analysis
		medicinal products are not	established format, partial	identification and purity of	results and correspond to the level
		accompanied by the	calculation formulas and	medicinal products are	of the corresponding course.
		chemistry of reactions,	results of quantitative	accompanied by the chemistry	
		quality indicators are not	determination are	of reactions, quality indicators	
		accompanied by drawings,	provided, units of	are accompanied by drawings,	
		illustrations based on the	measurement are partially	illustrations based on the	
		results of the analysis.	provided; reactions of	results of the analysis and	
			identification and purity	correspond to the level of the	
			of medicinal products are	corresponding course.	
			accompanied by the		
			cnemistry of reactions,		
			quality indicators are		
			drawings illustration		
			based on the results of the		
			analysis		
102	Apply knowledge and	-presents some results of	- presents partial fragmentary	- independently presents the	- independently conducts
102	understanding at a	research in the field of quality	results of research in the field	results of research in the field	pharmaceutical analysis of
	professional level.	control of medicines;	of quality control of medicines	; of quality control of	medicinal substances and finished
	formulate arguments			medicines; - shows readiness	medicinal products in the section

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Department of Pharmaceutical an	044-55/		
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	and solve problems in	-shows some readiness to	- shows a partial level of	to inform specialists and the	"identification", correctly arguing
	the studied area:	inform specialists and the	readiness to inform specialists	public about the compliance of	the choice of chemical and physical
	-apply the theoretical	public about the compliance of	and the public about the	medicines with the	methods;
	foundations of general	medicines with some	compliance of medicines with	requirements of regulatory	- "Identification" is the basic term
	chemical technology to	requirements of regulatory	the requirements of regulatory	documents: - demonstrates	for pharmaceutical substances and
	obtain chemical	documents:	documents:	sufficiently complete skills of	finished medicinal products:
	substances conduct	-demonstrates some skills of	- demonstrates partial	readiness to contribute ideas	- independently conducts
	qualitative and	readiness to introduce ideas	fragmentary skills of readiness	for solving problems in case of	nharmaceutical analysis of
	quantitative analysis	for solving problems in case	to contribute ideas for solving	non-compliance of the quality	medicinal products and finished
	master the technique of	of non-compliance of the	problems in case of non-	of medicines with the	medicinal products and missied
	naster the technique of	quality of medicines with the	compliance of the quality of	requirements of regulatory	"purity" correctly arguing the
	analytical aquinmont for	requirements of regulatory	modicines with the	documents	relationship between the methods of
	analytical equipment for	de cumente	medicines with the	documents.	abtaining and grouper storage of
	pharmaceutical analysis	documents.			obtaining and proper storage of
	of drugs;		documents.		medicinal products;
	-formulate arguments				- independently conducts
	and solve problems in				pharmaceutical analysis of finished
	the studied area, based				medicinal products in the section
	on knowledge in the				"quality indicators", correctly
	field of natural sciences				arguing the type of medicinal
	and on the skills of				product with the corresponding
	acquired new				quality indicator;
	knowledge in the				 independently conducts
	disciplines of the				pharmaceutical analysis of
	module;				medicinal products and finished
	-formulate arguments ar				medicinal products in the section
	solve problems of cause				"Quantitative determination",
	and affect relationship				correctly arguing the choice of
	and-enect relationship				analysis method taking into
	between the actual resul				account the type of medicinal
	of synthesis and the				product, therapeutic dose.
	requirements of regulate				sensitivity and selectivity of the
	documents for the qualit				analysis method
	of the substance at the				
	stages of obtaining and				
	production				
1.02		domonstratos como sivillo in	demonstrates nortial	full abilla in montring with	domonstrates fundomental skille in
LO3	Collects and	- demonstrates some skills in	- demonstrates partial,	- full skills in working with	- demonstrates fundamental skills in
LO3	Collects and interprets	- demonstrates some skills in working with analytical	- demonstrates partial, fragmentary skills in working	- full skills in working with analytical normative	- demonstrates fundamental skills in working with analytical regulatory
LO3	Collects and interprets information to form	- demonstrates some skills in working with analytical normative documentation	- demonstrates partial, fragmentary skills in working with analytical regulatory	- full skills in working with analytical normative documentation (AND),	- demonstrates fundamental skills in working with analytical regulatory documentation (ARD), regulatory
LO3	Collects and interprets information to form judgments taking	- demonstrates some skills in working with analytical normative documentation (AND), normative and	- demonstrates partial, fragmentary skills in working with analytical regulatory documentation (ARD),	- full skills in working with analytical normative documentation (AND), normative and technical	- demonstrates fundamental skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD)
LO3	Collects and interprets information to form judgments taking into account social,	- demonstrates some skills in working with analytical normative documentation (AND), normative and technical documentation	- demonstrates partial, fragmentary skills in working with analytical regulatory documentation (ARD), regulatory and technical	- full skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the	- demonstrates fundamental skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the
LO3	Collects and interprets information to form judgments taking into account social, ethical and scientific	- demonstrates some skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the State	- demonstrates partial, fragmentary skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the	- full skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the state pharmacopoeia of the	- demonstrates fundamental skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on
LO3	Collects and interprets information to form judgments taking into account social, ethical and scientific considerations	- demonstrates some skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the State Pharmacopoeia of the	- demonstrates partial, fragmentary skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the	- full skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the state pharmacopoeia of the Republic of Kazakhstan (SP RK)	- demonstrates fundamental skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and
LO3	Collects and interprets information to form judgments taking into account social, ethical and scientific considerations: -	- demonstrates some skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP	- demonstrates partial, fragmentary skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP	- full skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the state pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control,	- demonstrates fundamental skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines;
LO3	Collects and interprets information to form judgments taking into account social, ethical and scientific considerations: - interprets the choice	- demonstrates some skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control,	- demonstrates partial, fragmentary skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control,	- full skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the state pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of	- demonstrates fundamental skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; independently and competently
LO3	Collects and interprets information to form judgments taking into account social, ethical and scientific considerations: - interprets the choice of modern equipment	- demonstrates some skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of	- demonstrates partial, fragmentary skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of	- full skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the state pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines;	 demonstrates fundamental skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; independently and competently interprets the results of his/her own
LO3	Collects and interprets information to form judgments taking into account social, ethical and scientific considerations: - interprets the choice of modern equipment and devices based on	- demonstrates some skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines;	- demonstrates partial, fragmentary skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines;	- full skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the state pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; - independently interprets the	 demonstrates fundamental skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; independently and competently interprets the results of his/her own laboratory work and gives a
LO3	Collects and interprets information to form judgments taking into account social, ethical and scientific considerations: - interprets the choice of modern equipment and devices based on the physical and	 demonstrates some skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; interprets some results of his 	 demonstrates partial, fragmentary skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; interprets partial, fragmentary 	- full skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the state pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; - independently interprets the results of his own laboratory	 demonstrates fundamental skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; independently and competently interprets the results of his/her own laboratory work and gives a competent, well-founded
LO3	Collects and interprets information to form judgments taking into account social, ethical and scientific considerations: - interprets the choice of modern equipment and devices based on the physical and chemical properties	 demonstrates some skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; interprets some results of his own laboratory work and gives 	 demonstrates partial, fragmentary skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; interprets partial, fragmentary results of his own laboratory 	 full skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the state pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; independently interprets the results of his own laboratory work and gives a competent 	 demonstrates fundamental skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; independently and competently interprets the results of his/her own laboratory work and gives a competent, well-founded conclusion in accordance with the
LO3	Collects and interprets information to form judgments taking into account social, ethical and scientific considerations: - interprets the choice of modern equipment and devices based on the physical and chemical properties of the compounds	- demonstrates some skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; - interprets some results of his own laboratory work and gives an unsubstantiated conclusion	- demonstrates partial, fragmentary skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; - interprets partial, fragmentary results of his own laboratory work and gives a conclusion in	 full skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the state pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; independently interprets the results of his own laboratory work and gives a competent conclusion in accordance with 	 demonstrates fundamental skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; independently and competently interprets the results of his/her own laboratory work and gives a competent, well-founded conclusion in accordance with the requirements of regulatory
LO3	Collects and interprets information to form judgments taking into account social, ethical and scientific considerations: - interprets the choice of modern equipment and devices based on the physical and chemical properties of the compounds being studied	 demonstrates some skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; interprets some results of his own laboratory work and gives an unsubstantiated conclusion in accordance with the 	 demonstrates partial, fragmentary skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; interprets partial, fragmentary results of his own laboratory work and gives a conclusion in accordance with the 	- full skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the state pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; - independently interprets the results of his own laboratory work and gives a competent conclusion in accordance with the requirements of regulatory	- demonstrates fundamental skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; - independently and competently interprets the results of his/her own laboratory work and gives a competent, well-founded conclusion in accordance with the requirements of regulatory documents for the quality of
LO3	Collects and interprets information to form judgments taking into account social, ethical and scientific considerations: - interprets the choice of modern equipment and devices based on the physical and chemical properties of the compounds being studied, oralized and	- demonstrates some skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; - interprets some results of his own laboratory work and gives an unsubstantiated conclusion in accordance with the requirements of regulatory	- demonstrates partial, fragmentary skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; - interprets partial, fragmentary results of his own laboratory work and gives a conclusion in accordance with the requirements of regulatory	 full skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the state pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; independently interprets the results of his own laboratory work and gives a competent conclusion in accordance with the requirements of regulatory documents for the quality of 	 demonstrates fundamental skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; independently and competently interprets the results of his/her own laboratory work and gives a competent, well-founded conclusion in accordance with the requirements of regulatory documents for the quality of medicines;
LO3	Collects and interprets information to form judgments taking into account social, ethical and scientific considerations: - interprets the choice of modern equipment and devices based on the physical and chemical properties of the compounds being studied, analyzes and	 demonstrates some skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; interprets some results of his own laboratory work and gives an unsubstantiated conclusion in accordance with the requirements of regulatory documents for the quality of 	- demonstrates partial, fragmentary skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; - interprets partial, fragmentary results of his own laboratory work and gives a conclusion in accordance with the requirements of regulatory documents for the quality of	- full skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the state pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; - independently interprets the results of his own laboratory work and gives a competent conclusion in accordance with the requirements of regulatory documents for the quality of medicines;	 demonstrates fundamental skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; independently and competently interprets the results of his/her own laboratory work and gives a competent, well-founded conclusion in accordance with the requirements of regulatory documents for the quality of medicines; demonstrates fundamental skills in
LO3	Collects and interprets information to form judgments taking into account social, ethical and scientific considerations: - interprets the choice of modern equipment and devices based on the physical and chemical properties of the compounds being studied, analyzes and evaluates the tasks	 demonstrates some skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; interprets some results of his own laboratory work and gives an unsubstantiated conclusion in accordance with the requirements of regulatory documents for the quality of medicines; 	- demonstrates partial, fragmentary skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; - interprets partial, fragmentary results of his own laboratory work and gives a conclusion in accordance with the requirements of regulatory documents for the quality of medicines;	- full skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the state pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; - independently interprets the results of his own laboratory work and gives a competent conclusion in accordance with the requirements of regulatory documents for the quality of medicines; - demonstrates sufficiently	 demonstrates fundamental skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; independently and competently interprets the results of his/her own laboratory work and gives a competent, well-founded conclusion in accordance with the requirements of regulatory documents for the quality of medicines; demonstrates fundamental skills in working with scientific
LO3	Collects and interprets information to form judgments taking into account social, ethical and scientific considerations: - interprets the choice of modern equipment and devices based on the physical and chemical properties of the compounds being studied, analyzes and evaluates the tasks set, finds new	 demonstrates some skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; interprets some results of his own laboratory work and gives an unsubstantiated conclusion in accordance with the requirements of regulatory documents for the quality of medicines; demonstrates some skills in 	- demonstrates partial, fragmentary skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; - interprets partial, fragmentary results of his own laboratory work and gives a conclusion in accordance with the requirements of regulatory documents for the quality of medicines; - demonstrates partial,	 full skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the state pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; independently interprets the results of his own laboratory work and gives a competent conclusion in accordance with the requirements of regulatory documents for the quality of medicines; demonstrates sufficiently complete skills in working with 	 demonstrates fundamental skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; independently and competently interprets the results of his/her own laboratory work and gives a competent, well-founded conclusion in accordance with the requirements of regulatory documents for the quality of medicines; demonstrates fundamental skills in working with scientific pharmaceutical and medical
LO3	Collects and interprets information to form judgments taking into account social, ethical and scientific considerations: - interprets the choice of modern equipment and devices based on the physical and chemical properties of the compounds being studied, analyzes and evaluates the tasks set, finds new solutions to problems	 demonstrates some skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; interprets some results of his own laboratory work and gives an unsubstantiated conclusion in accordance with the requirements of regulatory documents for the quality of medicines; demonstrates some skills in working with scientific 	 demonstrates partial, fragmentary skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; interprets partial, fragmentary results of his own laboratory work and gives a conclusion in accordance with the requirements of regulatory documents for the quality of medicines; demonstrates partial, fragmentary skills in working 	 full skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the state pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; independently interprets the results of his own laboratory work and gives a competent conclusion in accordance with the requirements of regulatory documents for the quality of medicines; demonstrates sufficiently complete skills in working with scientific pharmaceutical and 	 demonstrates fundamental skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; independently and competently interprets the results of his/her own laboratory work and gives a competent, well-founded conclusion in accordance with the requirements of regulatory documents for the quality of medicines; demonstrates fundamental skills in working with scientific pharmaceutical and medical literature;
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L03 L04	Collects and interprets information to form judgments taking into account social, ethical and scientific considerations: - interprets the choice of modern equipment and devices based on the physical and chemical properties of the compounds being studied, analyzes and evaluates the tasks set, finds new solutions to problems in the field of professional activity.	 demonstrates some skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; interprets some results of his own laboratory work and gives an unsubstantiated conclusion in accordance with the requirements of regulatory documents for the quality of medicines; demonstrates some skills in working with scientific pharmaceutical and medical literature; shows some knowledge when evaluating domestic and foreign experiences on the topic of research in the field of quality control and standardization of medicines. 	 demonstrates partial, fragmentary skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; interprets partial, fragmentary regulatory work and gives a conclusion in accordance with the requirements of regulatory decumentary skills in working with scientific pharmaceutical and medical literature; shows a partial level of knowledge when assessing domestic and foreign experiences on the topic of research in the field of quality control and standardization of <u>medicines</u>. presents partial, fragmentary 	 full skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the state pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; independently interprets the results of his own laboratory work and gives a competent conclusion in accordance with the requirements of regulatory documents for the quality of medicines; demonstrates sufficiently complete skills in working with scientific pharmaceutical and medical literature; shows knowledge when assessing domestic and foreign experiences on the topic of research in the field of quality control and standardization of medicines. 	 demonstrates fundamental skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; independently and competently interprets the results of his/her own laboratory work and gives a competent, well-founded conclusion in accordance with the requirements of regulatory documents for the quality of medicines; demonstrates fundamental skills in working with scientific pharmaceutical and medical literature; shows a high level of knowledge when assessing domestic and foreign experiences on the topic of research in the field of quality control and standardization of medicines competently presents the results of results of research in the field of quality control of medicines;
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L03	Collects and interprets information to form judgments taking into account social, ethical and scientific considerations: - interprets the choice of modern equipment and devices based on the physical and chemical properties of the compounds being studied, analyzes and evaluates the tasks set, finds new solutions to problems in the field of professional activity.	 demonstrates some skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; interprets some results of his own laboratory work and gives an unsubstantiated conclusion in accordance with the requirements of regulatory documents for the quality of medicines; demonstrates some skills in working with scientific pharmaceutical and medical literature; shows some knowledge when evaluating domestic and foreign experiences on the topic of research in the field of quality control and standardization of medicines. presents some results of research in the field of quality control of medicines; - shows some results of research in the field of quality control of medicines. 	 demonstrates partial, fragmentary skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; interprets partial, fragmentary results of his own laboratory work and gives a conclusion in accordance with the requirements of regulatory documents for the quality of medicines; demonstrates partial, fragmentary skills in working with scientific pharmaceutical and medical literature; shows a partial level of knowledge when assessing domestic and foreign experiences on the topic of research in the field of quality control and standardization of medicines; presents partial, fragmentary results of research in the field of quality control of medicines; 	 full skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the state pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; independently interprets the results of his own laboratory work and gives a competent conclusion in accordance with the requirements of regulatory documents for the quality of medicines; demonstrates sufficiently complete skills in working with scientific pharmaceutical and medical literature; shows knowledge when assessing domestic and foreign experiences on the topic of research in the field of quality control and standardization of medicines. 	 demonstrates fundamental skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; independently and competently interprets the results of his/her own laboratory work and gives a competent, well-founded conclusion in accordance with the requirements of regulatory documents for the quality of medicines; demonstrates fundamental skills in working with scientific pharmaceutical and medical literature; shows a high level of knowledge when assessing domestic and foreign experiences on the topic of research in the field of quality control and standardization of medicines; competently presents the results of results of research in the field of quality control of medicines;
L03 L04	Collects and interprets information to form judgments taking into account social, ethical and scientific considerations: - interprets the choice of modern equipment and devices based on the physical and chemical properties of the compounds being studied, analyzes and evaluates the tasks set, finds new solutions to problems in the field of professional activity.	 demonstrates some skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; interprets some results of his own laboratory work and gives an unsubstantiated conclusion in accordance with the requirements of regulatory documents for the quality of medicines; demonstrates some skills in working with scientific pharmaceutical and medical literature; shows some knowledge when evaluating domestic and foreign experiences on the topic of research in the field of quality control and standardization of medicines. presents some results of research in the field of quality control of medicines; - bnows some results of research in the field of quality control and standardization of medicines. 	 demonstrates partial, fragmentary skills in working fragmentary skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; interprets partial, fragmentary results of his own laboratory work and gives a conclusion in accordance with the requirements of regulatory documents for the quality of medicines; demonstrates partial, fragmentary skills in working with scientific pharmaceutical and medical literature; shows a partial level of knowledge when assessing domestic and foreign experiences on the topic of research in the field of quality control and standardization of medicines; presents partial, fragmentary results of research in the field of quality control and standardization of medicines; shows a partial level of 	 full skills in working with analytical normative documentation (AND), normative and technical documentation (NTD) and the state pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; independently interprets the results of his own laboratory work and gives a competent conclusion in accordance with the requirements of regulatory documents for the quality of medicines; demonstrates sufficiently complete skills in working with scientific pharmaceutical and medical literature; shows knowledge when assessing domestic and foreign experiences on the topic of research in the field of quality control and standardization of medicines. independently presents the results of research in the field of quality control of medicines; - shows readiness to inform specialists and the public about the compliance of medicines 	 demonstrates fundamental skills in working with analytical regulatory documentation (ARD), regulatory and technical documentation (RTD) and the State Pharmacopoeia of the Republic of Kazakhstan (SP RK) on quality control, standardization and safety of medicines; independently and competently interprets the results of his/her own laboratory work and gives a competent, well-founded conclusion in accordance with the requirements of regulatory documents for the quality of medicines; demonstrates fundamental skills in working with scientific pharmaceutical and medical literature; shows a high level of knowledge when assessing domestic and foreign experiences on the topic of research in the field of quality control and standardization of medicines; competently presents the results of research in the field of quality control of medicines;

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information, ideas, and solutions to problems to specialists in conductin chemical-technological processes and documenting the results obtained, as well as to non-specialists on the quality of medicines.	about the compliance of medicines with some requirements of regulatory documents; - demonstrates some skills of readiness to introduce ideas for solving problems in case of non- compliance of the quality of medicines with the requirements of regulatory documents.	and the public about the compliance of medicines with the requirements of regulatory documents; - demonstrates partial, fragmentary skills of readiness to contribute ideas for solving problems in the event of non-compliance of the quality of medicines with the requirements of regulatory documents.	with the requirements of regulatory documents; - demonstrates sufficiently complete skills of readiness to contribute ideas for solving problems in case of non- compliance of the quality of medicines with the requirements of regulatory documents.	with the requirements of regulatory documents; - demonstrates fundamental skills of readiness to contribute ideas for solving problems in case of non- compliance of the quality of medicines with the requirements of regulatory documents.
LO5 Learning skills necessary to independently pursue further learning in the area of study: - has the skills to search for and analyze information, acquire new knowledge necessary for professional activities in the field of pharmaceutical production; - interprets the results of his own laboratory work on chemical and technological processes, methods and equipment for pharmaceutical analysis, gives a conclusion in accordance with the requirements of regulatory documents on the quality of medicines.	 is unable to demonstrate knowledge of the state system of quality control and standardization of drugs in the Republic of Kazakhstan; does not know enough and refers to regulatory documents governing the quality of drugs in the Republic of Kazakhstan (SPh RK, AND, VAND) and to international quality standards regulating the quality of drugs (European Pharmacopoeia, British Pharmacopoeia, Japanese Pharmacopoeia, SPh RF, SPh U, SPh RB). complete lack of understanding when preparing documentation of the established form for quality control of drugs in accordance with the requirements of regulatory documents and orders; does not sufficiently delve into the results of his own laboratory work, the design in the form of an analysis protocol and presents in class; makes an unreliable conclusion about the quality of drugs based on the results of the analysis. 	-demonstrates partial understanding of the knowledge of the state system of quality control and standardization of drugs in the Republic of Kazakhstan; - partially knows and refers to regulatory documents governing the quality of drugs in the Republic of Kazakhstan (SPh RK, AND, VAND) and to international quality standards regulating the quality of drugs (European Pharmacopoeia, British Pharmacopoeia, British Pharmacopoeia, SPh RF, SPh RU, SPh RB). - adequately draws up documentation of the established form on quality control of drugs in accordance with the requirements of regulatory documents and orders; - satisfactorily presents the results of his own laboratory work, draws up an analysis protocol and presents it in class; - makes a conclusion on the quality of drugs based on the results of the analysis, without justification.	 demonstrates a complete understanding of the state system of quality control and standardization of drugs in the Republic of Kazakhstan; sufficiently knows and refers to regulatory documents governing the quality of drugs in the Republic of Kazakhstan (SPh RK, AND, VAND) and to international quality standards regulating the quality of drugs (European Pharmacopoeia, British Pharmacopoeia, British Pharmacopoeia, Japanese Pharmacopoeia, SPh RF, SPh U, SPh RB). prepares documentation of the established form on quality control of drugs in accordance with the requirements of regulatory documents and orders; sufficiently substantiates the results of his own laboratory work, draws up an analysis protocol and presents it in class; makes the correct conclusion about the quality of drugs based on the results of the analysis. 	 demonstrates exceptional knowledge of the state system of quality control and standardization of drugs in the Republic of Kazakhstan; fully knows and appropriately refers to regulatory documents governing the quality of drugs in the Republic of Kazakhstan (SPh RK, AND, VAND) and to international quality standards regulating the quality of drugs (European Pharmacopoeia, U.S. Pharmacopoeia, SPh RF, SPh U, SPh RB). independently prepares documents and orders; reasonably presents the results of his own laboratory work, competently draws up an analysis protocol and presents it in class; reasonably and correctly makes a conclusion on the quality of the analysis.

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LO6	Knows methods of	- formulates some part of the	- partially formulates the	- formulates the problem,	- independently formulates the
	scientific research and	problem, mere are	problem, defines une	defines the purpose of the	problem, determines the purpose
	academic writing and	difficulties in determining	purpose of the research	research work, understands	of the research work, understands
	applies them to the	the goal and objectives of the	Work, understands and	and justifies the relevance,	and justifies the relevance,
	area of study:- knows	research work;	justines the relevance,	noverty, theoretical and	novelty, theoretical and practical
	the methods of	- makes a plan, goal and	novelty, theoretical and	practical significance of the	significance of the research
	scientific research	objectives of the research	the research tasks:	research tasks;	objectives;
	activities the	number of errors.	- partially draws up a plan	tasks of the research work.	purpose and objectives of the
	methodological	conducts scientific	purpose and tasks of the	• - masters new research	research work.
	foundations of	- conducts scientific	research work:	methods. acquires new	• - independently masters new
	cointific research	research using chemical,	- partially masters new	knowledge:	research methods, acquires new
	scientific research,	physical and chemical	research methods,	 - conducts scientific research 	knowledge;
	modern problems of	methods with the neip of a	acquires new knowledge;	using chemical,	 independently conducts
	pharmaceutical	teacher and interprets	- partially conducts	physicochemical methods and	scientific research using
	production, methods or	some of the results of the	scientific research using	presents the results of his work	chemical, physicochemical
	theoretical and	research.	chemical,	and correctly interprets the	methods, presents the results of
	empirical research, the	1	physicochemical methods,	results of the conducted	his work and correctly interprets
	methodology of	1	presents the results of his	research.	the results of the conducted
	organizing and	1	work and correctly	- draws conclusions of the	research.
	conducting a scientific	1	interprets the results of the	research work, correctly,	- independently draws
	experiment, the rules of	1	conducted research.	logically and consistently	conclusions of the research work,
	academic writing and	1	- partially draws	presents the obtained results in	correctly, logically and
	presentation of research	1	conclusions of the	writing, freely speaks about	consistently presents the
	results.	1	research work, contectly,	the results of his scientific	obtained results in writing, neery
		1	presents the obtained	WORK to all audience.	speaks about the results of his
		1	results in writing freely		scientific work to an addience.
		1	speaks about the results of		1
		1	his scientific work to an		1
		1 1	audience.		1
L07	Applies knowledge	- demonstrates a minimal	- demonstrates partial	- demonstrates a complete	- demonstrates exceptional
	and understanding	understanding of the	understanding of the	understanding of the relationship	knowledge and understanding of
	of facts, phenomena,	relationship between the	relationship between the	between the quality indicators of	the relationship between the quality
	theories and	quality indicators of drugs and	quality indicators of	drugs and their physical,	indicators of drugs and their
	complex	their physical, chemical	drugs, but cannot describe	chemical properties and	physical, chemical properties and
	relationships	properties and production	their physical, chemical	production methods;	production methods;
l	between them in the	methods;	properties and methods of	- selects methods for research	- independently selects methods
	area of study:	- unreasonably selects methods	production;	and analysis of drugs based on	for research and analysis of drugs
	selects methods for	for research and analysis of	- partially selects methods	their physical and chemical	based on their physical and
	research and analysis	drugs, without taking into	drugs based on their	properties;	reasonably predicts the
	of biologically active	chemical properties:	physical and chemical	between the chemical structure	relationship between the chemical
	compounds based on	- when forecasting, does not	properties:	and pharmacological activity of	structure and pharmacological
	their physical and	take into account the	-when forecasting.	drugs:	activity of drugs:
	chemical properties; -	relationship between the	partially takes into	- predicts the shelf life and	- effectively and accurately
	conducts all types of	chemical structure and	account the relationship	storage conditions of drugs	predicts the shelf life and storage
	chemical and	pharmacological activity of	between the chemical	based on the physical, chemical	conditions of drugs based on the
	technological testing	drugs;	structure and	properties, type and	physical, chemical properties, type
	of biologically active	- does not provide an accurate	pharmacological activity	composition of the dosage form	and composition of the dosage
	compounds and	forecast of the storage	of drugs;		form
	pharmaceutical	conditions of drugs and does	- predicts storage		
	analysis of drugs	not take into account the	conditions of drugs,		
	using modern	physical, chemical properties,	without taking into		
	equipment	types and compositions of the	account the physical,		
	equipinent.	dosage form	chemical properties, types		
		uosugo rorm	dosage form		

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10.2	Understands the importance of principles and culture of academic integrity ov - understands the principles and culture of academic honesty in the educational process, expressing the honesty of students in completing all assessment work in at the process of mastering theoretical and practical material in the disciplines of this module.	partially observes cademic honesty when ompleting assessed work, we artially relying on his/her own knowledge and p ersonal experience, c onscientiously performs all anctions of a student in an ducational institution; - artially understands the hics of citation: uses a lethod of transmitting omeone else's information ind thoughts with an indication of the author, title and source of the work; partially selects and uses eliable and trustworthy ources of information.	observes academic honesty when completing assessed work, relying on his/her work, relying on his/her work knowledge and kn ersonal experience, ex- onscientiously performs Il functions of a student in n educational institution; intation: meaningfully and ogically uses the method of log conveying someone else's nformation and thoughts, indicating the author, title nd source of the work; selects and uses reliable nd trustworthy sources of information.	berves academic honesty en completing assessed ork, relying on his/her own owledge and personal perience, conscientiously rforms all functions of a ident in an educational stitution; nderstands the ethics of ation: meaningfully and gically uses the method of nveying someone else's formation and thoughts, dicating the author, title and urce of the work; elects and uses reliable and istworthy sources of formation.	 strictly observes academic honesty when completing assessed work, relying solely on his/her own knowledge and personal experience, conscientiously performs all functions of a student in an educational institution; correctly understands the ethics of citation: meaningfully and logically uses the method of conveying someone else's information and thoughts, indicating the author, title and source of the work; independently selects and uses reliable and trustworthy sources of information.
10.2.1	Checklist for a l	aboratory lesson			
10.2.1 No	L ovol		I	aval	
Nº	Level evaluation criteria	Very high level (9.1-10.0 points at	High level (7,0- 9,0 points at each	Average level (5,0-7,0 points at each level)	Lower level (0-5,0 points at each
1	readiness to	readiness to	readiness to	readiness to	not ready to perform
1	laboratory work according to the workplace	laboratory work according to the workplace is very good	laboratory work according to the workplace is good	perform laboratory work according to the workplace is average	laboratory work according to the workplace
2	masters the technique of performing operations	very good at performing operations (calculates material balance, assembles a diagram, filters, titrates, etc.)	has a good command of the technique of performing operations (calculates material balance, assembles a diagram, filters, titrates, etc., allows minor errors)	average level of proficiency in the technique of performing operations (calculates material balance, assembles a diagram, filters, titrates, etc., makes significant errors)	does not have the technique for performing operations (cannot calculate the material balance, assemble a diagram, filter, titrate, etc.)
3	has skills in working with measuring utensils and measuring instruments	has skills in working with measuring utensils and measuring instruments	makes minor errors when working with measuring utensils and measuring	makes significant mistakes when working with measuring utensils and	does not have the skills to work with measuring utensils and measuring instruments

instruments

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				measuring	
				instruments	
4	observes safety	properly observes	allows minor	makes	does not observe
	precautions in	safety precautions	errors while	significant	safety precautions in
	the workplace	in the workplace	observing safety	mistakes when	the workplace
			precautions in the	observing safety	
			workplace	precautions in	
				the workplace	
5	correctly	correctly	makes minor	makes	cannot evaluate the
	evaluates the	evaluates the	errors when	significant	results of the
	results of the	results of the	evaluating the	mistakes when	operations performed
	operations	operations	results of	evaluating the	
	performed	performed	completed	results of	
			operations	completed	
				operations	
6	knows how to	knows how to	when making	when making	does not know how
	correctly	correctly calculate	calculations on	calculations on	to correctly calculate
	calculate the	the product yield,	the product yield,	the product	the product yield, its
	product yield,	its quantitative	its quantitative	yield, its	quantitative content,
	its quantitative	content, etc	content, etc.,	quantitative	etc.
	content, etc.		allows minor	content, etc., it	
			errors	makes	
				significant	
				errors	
7	knows how to	knows how to	when working	when working	does not know how
	work with	work with	with regulatory	with regulatory	to work with
	regulatory	regulatory	documents and	documents and	regulatory
	documents and	documents and	other reference	other reference	documents and other
	other reference	other reference	literature, makes	literature, he	reference literature
	literature	literature	minor mistakes	makes	
				significant	
0	.1	.1	1 1 1.1	mistakes	
8	correctly	correctly	when calculating	when	incorrectly calculates
	calculates the	calculates the	the product yield,	calculating the	the product yield and
	product yield	product yield and	when concluding	product yield,	gives an incorrect
	and gives the	gives the correct		when	conclusion
	correct	conclusion	results, allows	concluding the	
	conclusion		minor errors	results obtained,	
				it makes	
				significant	
10	anomara control	anawara control	anawara control	enous control	anawara control tosta
10	tests on the	tests on the tonic	tests on the tonic	answers control	answers control tests
	topic of the	of the laboratory	of the laboratory	topic of the	laboratory lasson (0
	laboratory	$1_{00000} (01, 1000)$	1_{1000} $(70,000)$	laboratory	50% correct
	losson (75		acreat answers)	$\frac{1}{1000} \frac{1}{1000} \frac{1}{1000$	
	188011 (75-	correct answers)	correct answers)		answers)
				correct answers)	

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АСАДЕМҮ АО «Южно-Казахстанская медицинская академия»

Department of Pharmaceutical and Toxicological Chemistry

MEDISINA

AKADEMIASY

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	100% coi	rrect				
	answer	:s)	01.100	70.00 5	50.70.C	0.50.5
	conclus	ion	91-100 points	/0-90 баллов Соод	50-/0 балла Setisfactory	0-50 баллов Unsetisfactory
			Excellent	000ú	Satisfactory	Ulisatisfactory
10.2	Checklist	for S	SIW			
N⁰	points			Evaluation	criteria	
1	excellent	Prep	aration and defense	of the abstract		
	A(4,0;	• t	he abstract fully con	plies with the requir	rements for writing	abstracts set out in the
	95-	r	nethodological recor	nmendations for SIW	/;	
	100%);	• v	when defending an at	ostract, demonstrates	fluency in the mate	rial, presents it clearly,
	A-(3,67;	C	clearly, logically, con	npetently, convincing	gly, and speaks pro	fessionally;
	90-94%);	• 0	confidently and accur	ately answers question	ons;	
		· s	submitted on time ac	cording to schedule.		
		Revi	ew of the abstract	<u> </u>		1, 1, 1, 1
		• 1	the review fully re	effects: the relevant	ce of the topic,	novelty and practical
			significance, conclus	was completed the c	ons, the degree to v	rmulation the outhor's
		-	familiarity with the	was completed, the construction of the constru	be depth of the dis	cussion the literacy of
			the presentation.	scientific merature, t	ne depui or the dis	cussion, the interacy of
			sensible and principl	ed comments and sug	proestions.	
			confidently and accu	rately answers questi	ions:	
		•	submitted on time ac	cording to schedule.		
		Prese	entation	U		
		1. G	eneral requirements.			
		• 1	the design of the slid	les and the presentati	on of information t	fully complies with the
	requirements for the presentation, set out in the methodological recommendation			gical recommendations		
	for SIW;					
	• when defending, demonstrates fluency in the material, presents it clearly, clearly			ents it clearly, clearly,		
	logically, competently, convincingly, and speaks professionally;			ully;		
			confidently and accu	rately answers questi	ions;	
			sublittee of the ac	column to schedule.	ons to the lecture"	
		Addi	tions to the lecture s	nould reflect.	ins to the recture .	
		• r	ational name. synony	vms of drugs:		
		• f	unctional analysis w	ith the chemistry of r	eactions;	
		• i	ustification for the c	hoice of pharmacopo	beial and non-pharm	nacopoeial methods of
			quantitative analysis	with the chemistry of	of reactions and the	necessary calculations
			of quantitative measu	irements;		
		·j	ustification of the pu	rity parameters recor	nmended by regula	itions;
		· ·	description of new o	lrugs (chemical forn	nula, Latin, rationa	l names, physical and
			chemical properties,	methods of analysis,	application, etc.).	
		Revie	ew of the presentatio	n		6 1
		• 1	the review fully refle	ects: compliance with	h the requirements	for the presentation in
			terms of design sty	ie, presentation of i	information, conten	at, text set out in the
			guidelines for SIW;			

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		 sensible and significant comments and suggestions;
		 confidently and accurately answers questions;
		 submitted on time according to schedule.
		Compilation of test tasks
		• test tasks (at least 20 tasks) meet the requirements: adequacy (validity), logic,
		conciseness and brevity of the text, correct arrangement of task elements, simplicity
		- one test task must contain one task of one level of difficulty, with one correct
		answer:
		• submitted on time according to schedule.
		Making a crossword:
		• crossword puzzle cells are clear, distinct, symmetrical;
		• the number of word intersections is not less than 8;
		• a unified style of tasks is maintained, the answer is a logical conclusion of the
		question posed;
		• tasks are composed lexically and stylistically correctly:
		• the number of tasks in the crossword puzzle is not less than 30, covering all the main
		questions of the topic.
		During midterm control
		1.Testing
		• 90-100% correct answers
2	good	Meets the above evaluation criteria but allows:
	B+(3,33;	Preparation and defense of the abstract
	85-89%);	 insignificant notes on design ;
	B (3,0;80-	 non-fundamental mistakes when answering questions.
	84%);	Review of the abstract
	B-(2,67;	 typos, incorrect expressions;
	75-79%);	• not fundamental errors, inaccuracies in answering questions.
	C+(2,33;	Presentation
	70-74%)	• minor design comments;
		 non-fundamental errors when answering questions.
		Review of the presentation
		 typos, incorrect expressions;
		 non-fundamental mistakes, inaccuracies when answering questions.
		Compilation of test tasks
		• test tasks (at least 20 tasks) have insignificant comments (no more than 2-3) according
		to the above criteria.
		Making a crossword:
		• meets all the above criteria, but a uniform design style is not maintained.
		During midterm control
		1.Testing
		• 70-89% correct answers
3	satisfacto	Meets the above assessment criteria but allows:
	ry	Preparation and defense of the abstract
	C (2,0;	 significant comments on the design;
	65-69%);	• fundamental mistakes in answering questions.
	C- (1,67;	Review of the abstract

 ОЙТÚSTIK-QAZAQSTAN MEDISINA АКАDEMIASY
 SOUTH KAZAKHSTAN MEDICAL ACADEMY AO «Южно-Казахстанская медицинская академия»

 Оңтүстік Қазақстан медицина академиясы» АҚ
 MEDICAL ACADEMY AO «Южно-Казахстанская медицинская академия»

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 Д+(1,33; 55-63%); Д (1,0; 50-54%) • fundamental errors, inaccuracies in answering questions; comments and suggestion require correction. <i>Presentation</i> • significant comments on the design; • fundamental errors in answering questions <i>Review of the presentation</i> fundamental errors, inaccuracies in answering questions, comments and suggestion that are not fundamental. <i>Compilation of test tasks</i> • test tasks have significant comments (no more than 2-3) according to the abov criteria. <i>Making a crossword</i>:
 55-63%); require correction. Д (1,0; <i>Presentation</i> significant comments on the design; fundamental errors in answering questions <i>Review of the presentation</i> fundamental errors, inaccuracies in answering questions, comments and suggestion that are not fundamental. <i>Compilation of test tasks</i> test tasks have significant comments (no more than 2-3) according to the abov criteria.
Д (1,0; Presentation 50-54%) • significant comments on the design; • fundamental errors in answering questions Review of the presentation fundamental errors, inaccuracies in answering questions, comments and suggestion that are not fundamental. Compilation of test tasks • test tasks have significant comments (no more than 2-3) according to the abov criteria. Making a crossword:
 50-54%) significant comments on the design; fundamental errors in answering questions <i>Review of the presentation</i> fundamental errors, inaccuracies in answering questions, comments and suggestion that are not fundamental. <i>Compilation of test tasks</i> test tasks have significant comments (no more than 2-3) according to the abov criteria. <i>Making a crossword</i>:
 fundamental errors in answering questions <i>Review of the presentation</i> fundamental errors, inaccuracies in answering questions, comments and suggestion that are not fundamental. <i>Compilation of test tasks</i> test tasks have significant comments (no more than 2-3) according to the abov criteria. <i>Making a crossword</i>:
 <i>Review of the presentation</i> fundamental errors, inaccuracies in answering questions, comments and suggestion that are not fundamental. <i>Compilation of test tasks</i> test tasks have significant comments (no more than 2-3) according to the abov criteria. <i>Making a crossword</i>:
 fundamental errors, inaccuracies in answering questions, comments and suggestion that are not fundamental. <i>Compilation of test tasks</i> test tasks have significant comments (no more than 2-3) according to the abov criteria. <i>Making a crossword</i>:
 that are not fundamental. <i>Compilation of test tasks</i> test tasks have significant comments (no more than 2-3) according to the abov criteria. <i>Making a crossword</i>:
 Compilation of test tasks test tasks have significant comments (no more than 2-3) according to the abov criteria. Making a crossword:
 test tasks have significant comments (no more than 2-3) according to the abov criteria. Making a crossword:
criteria. Making a crossword:
Making a proseword
• meets all the above criteria, but the number of tasks in the crossword is less than 30
During midterm control
Testing
· 50-69% correct answers
4 unsatisf. Preparation and defense of the abstract
FX(0,5; · does not meet some design requirements.
25-49%) • does not have sufficient knowledge of the material, reads the text, does not answe
questions.
Review of the abstract
• does not meet the requirements, some points of the abstract are not sufficiently
covered.
Presentation
 does not meet some design requirements.
• does not have sufficient knowledge of the material, reads text from a slide, does not
answer questions.
Review of the presentation
• does not meet the requirements, some points of the presentation are not sufficiently
covered.
Compilation of test tasks
test tasks have significant comments (more than 2-3) according to the above criteria
Making a crossword:
does not meet some requirements.
During midterm control
Testing
25-49% confect answers.
E (0) :
0.40% does not have the material:
(0-49%) does not nave the material,
Review of the abstract
does not meet the requirements all points of the abstract are not sufficiently covered
• not submitted on time
Presentation
• does not meet the design requirements.

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	MEDISINA	SKMA	MEDICAL	
	AKADEMIASY	(1)	ACADEMY	
	«Оңтүстік қазақстан медицина академиясы» Ақ	× y	АО «Южно-казахстанская медицинс	кая академия»
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	• does not have the material;				
	• not submitted on time.				
	<i>Review of the presentation</i>	on are not sufficiently			
	covered:	on are not sufficiently			
	• not submitted on time				
	Compilation of test tasks				
	• test tasks have significant comments (more than 4-5) on the al	oove criteria:			
	 not submitted on time 	sove enteria,			
	Making a crossword:				
	 does not meet requirements; 				
	• not submitted on time.				
	During midterm control				
	Testing				
	less than 50% correct answers				
10.3 Criteria	for evaluating project work				
	Criteria "Goal setting and project planning"	Points			
		unsatisf			
Goal is not fo	0-49%				
	satisf.				
The goal is f o	50-69%				
		good			
The goal is fo	prmulated, justified , and a schematic plan for achieving it is given.	70-89%			
The goal is formulated, clearly iustified , and a detailed plan for achieving it is excellent					
given.	90-100%				
_	Criterion "Statement and justification of the project problem	m"			
		unsatisf.			
The project p	roblem is not formulated	0-49%			
		eatief			
The former left	ion of the project pupplem is superficial	50 600/			
The formulat	ion of the project problem is superficial	50-09%			
		good			
The project p	70-89%				
		excellent			
The present -					
The project p	Toblem is clearly formulated, justified and deep in nature.	70-100%			
l	Criterion "Diversity of information sources used"	1			
		unsatisf.			
Information t	hat was not relevant to the topic and purpose of the project was used	0-49%			
Most of the in	nformation presented is not relevant to the topic of the work.	satisf.			

-caller OŃTÚSTIK-QAZAQSTAN SOUTH KAZAKHSTAN SKMA -1979-,,\|,, MEDISINA

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АКАДЕМІАЅҮ «Оңтүстік Қазақстан медицина академиясы» АҚ АО «Южно-Казахстанская медицинс	кая академия»
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	50-69%			
The work contains a small amount of relevant information from a limited number of similar sources	good 70-89%			
The work contains fairly complete information from a variety of sources.	excellent 90-100%			
Criterion "Depth of disclosure of the project topic"				
Topic of the project is not disclosed	unsatisf. 0-49%			
Topic of the project is disclosed in fragments	satisf. 50-69%			
The topic of the project has been revealed, the author has demonstrated knowledge of the topic within the framework of the work program in the discipline being studied	good 70-89%			
The topic of the project is fully disclosed; the author has demonstrated deep knowledge that goes beyond the scope of the work program being studied.	excellent 90-100%			
Criterion "Analysis of the progress of work and the results obtained, conclusions"				
No attempts have been made to analyze the progress and results of the work	unsatisf. 0-49%			
The analysis is replaced by a brief description of the progress and order of work	satisf. 50-69%			
A detailed result of the work to achieve the goals stated in the project is presented.	good 70-89%			
An exhaustive analysis of the obtained work results is presented, the necessary conclusions are drawn, and work prospects are outlined.	excellent 90-100%			
Criterion "Achieving the goal and compliance with the content of th	e project"			
The goals stated in the project were not achieved	unsatisf. 0-49%			
A significant part of the working methods used do not correspond to the theme and purpose of the project	satisf. 50-69%			
The methods used correspond to the theme and purpose of the project, but are insufficient	Good 70-89%			
The methods of work are sufficient and used appropriately and effectively, the objectives of the project are achieved	excellent 90-100%			
Criterion "Personal participation, creative approach to worl	k"			

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АКАДЕМІАЅҮ «Оңтүстік Қазақстан медицина академиясы» АҚ АСАДЕМҮ АО «Южно-Казахстанская медицина	ская академия»
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The work is formulaic , showing the formal attitude of the author	unsatisf. 0-49%
The author showed little involvement in the topic of the project, but did not demonstrate independence in work, did not use the possibilities of a creative approach	satisf 50-69%
The author showed little involvement in the topic of the project, but did not demonstrate independence in work, did not use the possibilities of a creative approach	good 70-89%
The work is distinguished by a creative approach , full participation and the author's own original attitude to the idea of the project	excellent 90-100%
Criterion "Compliance with the requirements for the written p	oart"
The written part of the project does not meet the requirements, all sections of the work are not disclosed and the work is not submitted on time	unsatisf. 0-49%
In the written part of the work, all sections are partially disclosed, bfundamental mistakes	satisf. 50-69%
There are typos and incorrect expressions in the work.	good 70-89%
The work fully reflects: the relevance of the topic, novelty and practical significance, conclusions, recommendations, the degree of solution to the problem and completion of the work, the correctness of its formulation, the author's familiarity with the scientific literature, the depth of the discussion, the literacy of the presentation and the work was delivered on time according to schedule	excellent 90-100%
Criterion "Quality of presentation"	
There are a large number of fundamental errors in the presentation and answer the questions.	unsatisf. 0-49%
The presentation contains minor fundamental errors and inaccuracies; partial fundamental errors when answering questions	satisf. 50-69%
The presentation contains typos, incorrect expressions, some non-fundamental errors, and inaccuracies in answering questions.	good 70-89%
The presentation in terms of design style, presentation of information, content, text meets the general requirements for presentation design. The author confidently and accurately answers questions	excellent 90-100%
Criterion "Quality of the final product"	
There is no project product	unsatisfactory 0-49%
The design product does not meet quality requirements (aesthetics, ease of use, compliance with stated goals)	satisfactory 50-69%

აქგა OŃTÚSTIK-QAZAQSTAN SOUTH KAZAKHSTAN **SKMA** MEDISINA MEDICAL AKADEMIASY ACADEMY 11 «Оңтүстік Қазақстан медицина академиясы» АҚ АО «Южно-Казахстанская медицинская академия» Department of Pharmaceutical and Toxicological Chemistry 044-55/ 27 page. from Working curriculum for the discipline 30 "Methods and equipment for pharmaceutical analysis"

			1
		•	good 70,800/
The product does not i	/0-89%		
The product fully mee	ts the quality require	ments (aesthetically pleasing.	easy to excellent
use, meets the stated p	90-100%		
10.4 Multi-point s	ystem of knowledg	e assessment	
Letter System	Digital Points	% content	Traditional
Evaluation	Equivalent		Rating Scale
А	4,0	95-100	Excellent
A -	3,67	90-94	
B +	3,33	85-89	Good
В	3,0	80-84	
B -	2,67	75-79	
C +	2,33	70-74	
С	2,0	65-69	Satisfactory
C -	1,67	60-64	
D+	1,33	55-59	
D-	1,0	50-54	
FX	0,5	25-49	Unsatisfactory
F	0	0-24	
11 Learning res	NURCAS		

11.1 Electronic resources, including but not limited to: databases of educational literature, animation simulators, professional blogs, websites, electronic reference materials. Links to the lecture complex on the discipline "Methods and equipment for pharmaceutical analysis":

Electronic resources LIC:

Electronic library of SKMA - https://e-lib.skma.edu.kz/genres Republican Interuniversity Electronic Library (RIEL) - http://rmebrk.kz/ Digital library «Aknurpress» - https://www.aknurpress.kz/ Electronic library «Epigraph» - http://www.elib.kz/ Epigraph - multimedia textbook portal https://mbook.kz/ru/index/ ЭБС IPR SMART https://www.iprbookshop.ru/auth information and legal system "Zan" - https://zan.kz/ru Cochrane Library - https://www.cochranelibrary.com/

11.2 **Electronic resources:**

Харитонов, Ю. Я. Аналитическая химия. Аналитика - 2. Количественный 1. анализ. Физико-химические (инструментальные) методы анализа [Электронный ресурс]: учебник. - Электрон. текстовые дан. (43,1Мб). - М.: ГЭОТАР - Медиа, 2017

	2. Харитонов, Ю. Я. Аналитическая химия. Аналитика - 1. Общие теоретические
	основы. Качественный анализ [Электронный ресурс]: учебник Электрон, текстовые
	лан. (44.3Мб) М. : ГЭОТАР - Мелиа. 2017
	З Харитонов Ю Я Аналитическая химия Качественный анализ Титриметрия
	[Электронный ресурс]: унебник - Электрон текстовые дан (39.9Мб) - М : ГЭОТАР
	Мациа 2017
	- Weddia, 2017
	4. Ордаоаева, С. К. Промышленные методы получения лекарственных средств
	[электронный ресурс]: лаоораторный практикум / С. К. Ордаоаева, А. Д. Асильоекова.
	шымкент : [0. и.], 2010 200 0. эл. опт. диск (CD-ROM).
	5. Фармациядағы физикалық-химиялық әдістер. [Электронный ресурс] = Физико-
	химческие методы исследования. = Physical and chemical impharmacy, on the absorption
	of electromagnetig Radiation : эдістемелік ұсыныс / С. К. Ордабаева [ж. б.]; ОҚМФА;
	Фармацевтикалық және токсикологиялық химия каф Электрон. текстовые дан. (8,72
	Мб) Шымкент : Б. ж., 2013 эл. опт. диск
	6. Анализ лекарственных веществ. Ч.1. Общие реакции на подлинность: учеб. пособ. /
	В.А. Смирнов Самара. Самар. гос. техн. ун-т, 2008 55 с
	https://aknurpress.kz/reader/web/2637
	7. Тюкавкина, Н. А. Биоорганическая химия [Электронный ресурс] : учебник / -
	Электрон. текстовые дан. (47,4 МБ) М. : Издательская группа "ГЭОТАР- Медиа",
	2011 416 с. эл. опт. диск (CD-ROM) (Электронный учебник).
	Laboratory resources: instruments and equipment for performing laboratory tasks:
	• Electric aquadistiller A3-25 MO;
	• Water bath thermostat WB-4MS;
	• Laboratory ion meter <i>H</i> -160;
	 Photoelectric concentration colorimeter ΚΦΚ-2;
	• Laboratory centrifuge CM-6M:
	• Laboratory microscope MC 50:
	• Magnetic stirrer with heating MSH-300:
	• Mini shaker 3D:
	• Refractometer RL3:
	• Refractometer//PΦ-454 Б2M:
	• pH meter - millivoltmeter pH-150MA:
	• Rotamix RM-1:
	• Spectrophotometer C-000.
	• Water thermostat U/UH:
	 Photoelectric photometers KΦK-3-«30M3»·
	 Fourier spectrometer infrared infralum ØT-08
	 Chromatograph IIXM-2000;
	 Digital spectrophotometer PD_303S:
	- Digital spectrophotometer i D-3035, Electropic scales CAS ME $_{-}$ 10 PIONEER $_{-}$ $\Delta \Delta_{-}$ 160 etc.
3	Special programs: STATISTICA-Version 10 (StatSoft Inc. CIIIA) Microsoft Office Excel
.5	«ChemStation 3D»

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Working curriculum for the discipline

"Methods and equipment for pharmaceutical analysis"

11.4	Journals (electronic journals): journals "Pharmacy", "Chemical-Pharmaceutical Journal",
	"Pharmacy of Kazakhstan", etc.
11.5	Literature
	main:
	in Russian language
	Анализ лекарственных препаратов, производных ароматических соединений:
	Ордабаева С.КШымкент: Типография «Әлем» 2012270 с.
	Асильбекова, А. Д. Промышленные методы получения лекарственных средств:
	лабораторный практикум / А. Д. Асильбекова, С. К. Ордабаева Алматы : New book, 2022212 с.
	Государственная фармакопея Республики КазахстанАлматы: Издательский дом «Жибек жолы»2008Том 1592 с.
	Государственная фармакопея Республики Казахстан Алматы: Издательский дом «Жибек жолы»2009Том 2804 с.
	Государственная фармакопея Республики КазахстанАлматы: Издательский дом «Жибек жолы»2014Том 3864 с.
	Государственная Фармакопея Республики Казахстан. Т.1. – Алматы: Издательский дом «Жибек жолы», 2015. – 720 с.
	Руководство по инструментальным методам исследований при разработке и
	экспертизе качества лекарственных препаратов./– М. Изд-во Перо, 2014. – 656с.
	Харитонов, Ю. Я. Аналитическая химия. Количественный анализ, физико-
	химические методы анализа: практикум: учеб. пособие -М.:ГЭОТАР - Медиа, 2012 368с.
	Харитонов, Ю. Я. Аналитическая химия. Аналитика 2. Количественный анализ.
	Физико-химические (инструментальные) методы анализа: учебник - М: ГЭОТАР - Медиа, 2014 656 с.
	. Адиходжаева, Б. Б. Аналитическая химия: учебное пособие / -Алматы: ЭСПИ, 2023 220с.
	. Бошкаева, А. К. Структурные исследования лекарственных веществ методами физико- химического анализа: учеб. пособие/ - Алматы : New book, 2022 276 с.
	. Халиуллин, Ф. А. Инфракрасная спектроскопия в фармацевтическом анализе: учебное пособие / - М.: ГЭОТАР - Медиа, 2017 160 с
	. Сейтембетова, А. Ж. Аналитическая химия: учебное пособие / - Алматы : New book, 2022124с.
	. Тюкавкина, Н. А. Биоорганикалық химия: оқулық / Қаз. тілінен ауд. жауапты ред. Т.
	С. Сейтембетов М. : ГЭОТАР - Медиа, 2014 400 бет. +эл. опт. диск (CD-ROM)
	. Тюкавкина, Н. А. Биоорганическая химия: учебник /- М.: ГЭОТАР -Медиа, 2011
	416c.
	in Kazakh language
	Дәріс кешені- Фармацевтикалық талдаудың әдістері мен құралдары пәні бойынша :
	дәріс кешені / фармацевтикалық және токсикологиялық химия кафедрасы Шымкент
	: ОҚМФА, 2016 92 бет

 $\sim db_{\mathcal{P}}$ OŃTÚSTIK-QAZAQSTAN SOUTH KAZAKHSTAN SKMA MEDICAL MEDISINA AKADEMIASY ACADEMY 11 «Оңтүстік Қазақстан медицина академиясы» АҚ АО «Южно-Казахстанская медицинская академия» Department of Pharmaceutical and Toxicological Chemistry 044-55/ 30 page. from Working curriculum for the discipline 30 "Methods and equipment for pharmaceutical analysis"

Қазақстан Республикасының Мемлекеттік фармакопеясы.-Алматы: «Жібек жолы» баспа үйі.-2008.-1 Т.-592 б. Қазақстан Республикасының Мемлекеттік фармакопеясы.-Алматы: «Жібек жолы» баспа уйі.-2008.-2 Т.-792 б. Казақстан Республикасының Мемлекеттік фармакопеясы.-Алматы: «Жібек жолы» баспа үйі.-2014.-3 Т.-864 б. Казақстан Республикасының Мемлекеттік фармакопеясы. Т. 1. – Алматы: «Жібек жолы» баспа үйі, 2015. – 720 бет additional: Арзамасцев, А. П. Фармацевтическая химия: учеб. пособие/-3-е изд., испр. . - М. : ГЭОТАР - Медиа, 2008. - 640 с Арзамасцев, А. П. Руководство к лабораторным занятиям по фармацевтической химии: учебное пособие / М.: Медицина, 2004. - 384 с. - (Учеб. лит. для студ. фарм. вузов и фак.). Беликов, В. Г. Фармацевтическая химия : учебное пособие/- 2-е изд. - М. : Медпрессинформ, 2008. - 616 с. Практикум по физико-химическим методам анализа, под ред. О.М. Петрухина.-М., 1987.-248 с. 12 **Course policy** Requirements for students, attendance, behavior, grading policies, penalties, incentives, etc. Students need: possess theoretical knowledge and practical skills in basic chemical disciplines (inorganic, organic, physical chemistry) and be able to apply them to chemical technological processes; be prepared to perform laboratory work in the field of chemical production individually, in pairs, in small groups; carry out SIW according to schedule; attend SIW classes, attendance of which is recorded weekly in the journal; if the SIW is absent from classes, penalties are prescribed; have an idea of the topic of the upcoming lecture, be prepared for feedback during the lecture: be able to work in a team; observe safety precautions in the chemical laboratory; treat laboratory glassware, supplies, and equipment with care; keep the workplace clean. the penalty point for missing one lecture class without a good reason is 1 point, which is deducted from the MC's grades; if you miss one SIW lesson - 2 points from the AAR (excluding 60% of current control); assessment of the admission rating (AAR) for the final control in the discipline consists of average scores for the laboratory lesson, SIW, midterm control and lecture attendance; \checkmark AAR for the final control in discipline must be at least 30 points (50%). 13 Academic policy based on the moral and ethical values of the academy МиссияMission

OŃTÚSTIK-QAZAQSTAN	2962	SOUTH KAZAKHSTAN	
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Department of Pharmaceutical and Toxicological Chemistry			044-55/
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Working curriculum for the discipline "Methods and equipment for pharmaceutical analysis"

	Training of highly qualified competitive medical and pharmaceutical specialists for the Southern region and the country as a whole based on the achievements of modern science					
and practice, ready to adapt to rapidly changing conditions in the medical and pharmaceutical						
industry through continuous improvement of competence and development of creative						
initiative.						
Vision	Vision					
An effective system of medical and pharmaceutical education, based on a competency-based						
approach and t	he needs of practical h	nealthcare and the pharmaceutical in	dustry, focused on			
training special	lists who meet internat	tional quality and safety standards.				
Basic ethical principles on which SKMA relies to implement its mission:						
The principle of high professionalism of SKMA teaching staff is the constant						
improvement	of their knowledge	and skills, ensuring the provisio	n of high-quality			
educational ser	vices to students at all	levels of training.				
The principle of quality in SKMA is the implementation of the concept of modernization						
of Kazakhstani education, the main direction of which is to ensure modern quality of						
education based on maintaining its fundamentality and compliance with the current and						
future needs o	future needs of the individual, society and the state, which is ensured by the use in the					
educational pr	ocess, research activ	ities and advisory - diagnostic w	ork of innovative			
technologies and new achievements of science and practice.						
The principle	e of learning orient	ation is the implementation of a	a student-centered			
educational pro	beess along flexible tra	ajectories of educational programs, t	aking into account			
rapidly changin	anditions for student	is and current trends in the labor in	larket, creating the			
and monitoring	conditions for student	s for their professional growin, deve	ograms oxpanding			
the scope of kn	owledge and compete	and monitoring learning outcomes, continuous updating of educational programs, expanding				
the scope of knowledge and competencies necessary for effective professional activities.						
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ОŃTÚSTIK-QAZAQSTAN MEDISINA AKADEMIASY «Оңтүстік Қазақстан медицина академиясы» АҚ	SOUTH KAZAKHSTAN SKMA -1977- -197-	академия»
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