Kazakh National University al-farabi
Faculty of Chemistry and Chemical Technology
Educational program in the specialties:
"7M07106 Chemical technology of organic substances

Syllabus
Selected chapters of Pharmaceutical Chemistry
Spring semester 2019-2020 academic year Year

Discipline code	Discipline name	SIW	Hours per week			Amount of credits	SIWT
			Лек	Семинар	Лаб		
	Selected chapters of Pharmaceutical Chemistry	98	15	30	-	3	6

Lecturer	Kipchakbaeva Aliya Kuanyshovna PhD, Senior Lecturer		Scheduled
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Academic Course Presentation	The purpose of the discipline: are the formation of students' ideas about the basics of quality control of medicines in the Republic of Kazakhstan, the CIS and international practice, the functioning of testing laboratories and methods of analysis of pharmaceutical substances and dosage forms. As a result of studying the discipline, the student will be able to: - Draw up a drug analysis chart; - To develop an alternative way to analyze organic compounds; - Explain the features of physico-chemical analysis of the dosage form; - To formulate criteria for assessing the reliability of the results obtained using a specific analysis method; - Plan the optimal scheme for the analysis of drugs; - Create essays on the use of physico-chemical methods for the analysis of organic molecules; - Assess the prospects of the practical use of a specific physico-chemical method of analysis of drugs, based on the structure.
Prerequisites and Postrequisites	NC Inorganic chemistry, AN Analytical chemistry, PH Physical chemistry, OH Organic chemistry, Special courses SPOH Current problems in organic chemistry, HTPSLP Chemical technology for the production of synthetic drugs.
Literature and Resources	**Literature** 1. Analysis of medicinal mixtures / A.P. Arzamastsev, V.M. Pechennikov, G.M. Rodionova et al. - M.: Sputnik + Company, 2000. - 275 p. 2. Glushchenko NN Pharmaceutical Chemistry: A Textbook for Stud. wednesday prof. textbook. institutions / N.N. Glushchenko, T.V. Pleteneva, V.A. Popkov; Ed. T.V. Wicker. - M.: Publishing Center "Academy", 2004. - 384 p. 3. Loginova N. V., Polozov G. I. Introduction to pharmaceutical chemistry: Textbook. - Mn .: BSU, 2003.-250 p. 4. The State Pharmacopoeia of the USSR, XI edition. - M.: Medicine, 1987 (Issue 1), 1989 (Issue 2). 5. The State Pharmacopoeia of the USSR, X edition. - M.: Medicine, 1968. 6. The State Register of Medicines, 1998, 1999, 2000. 7. Pharmaceutical chemistry: Textbook. allowance / Ed. L.P. Arzamastseva. - M.: GEOTAR-MED, 2004 .-- 640 p. 8. Certification system of pharmaceutical certification systems of GOST RF (Regulation on the Certification System of Medicinal Products Certification

	Systems of GOST RF), 1998, 28 p. 9. Pharmaceutical analysis of drugs / Ed. V.A. Shapovalova. - Kharkov: IMP Rubicon, 1995. 10. Pharmaceutical Drug Analysis Ed. Shapovalova V.A., Kharkov, 1995, 396 p. **Internet resources:** 1. Information portal. - Access mode: http://www.xumuk.ru; 2. Information portal. - Access mode: http://www.alhimikov.net; 3. Information portal. - Access mode: http://www.chemport.ru; 4. Russian State Library. - Access mode: www.rsl.ru; 5. Information and reference portal. - Access mode: www.librari.ru;
Academic policy of the course in the context of university moral values	**Rules of academic conduct:** 1. For each classroom lesson (seminar) you must prepare in advance, according to the schedule below. Preparation of the assignment should be completed before the classroom session, on which the topic is discussed. 2. CDS passed a week later will be accepted, but the grade is reduced by 50% 3. Academic values: 1. Seminars, CDS should be independent, creative 2. Plagiarism, forgery, the use of cheat sheets, cheating at all stages of knowledge control are unacceptable 1. 3. Students with disabilities can receive counseling at E-mail aliya_k85@mail.ru
Grading and Certification Policy	**Criteria assessment:** assessment of learning outcomes in relation to descriptors (verification of the formation of competencies in midterm control and exams). **Summative assessment:** assessment of the presence and activity of work in the audience; assessment of the completed task.

Calendar (schedule) of the content of the training course

Week	Topic Title	Number hour	Max ball
1	**1 lecture.** State principles and regulations governing the quality of medicines. The relationship of biomedical requirements (efficacy and safety) with the quality of drugs. Terminology: quality, level of quality.	1	
1	**Seminar lesson.** The legislative nature of pharmacopeia articles. General characteristics of ND (requirements, norms and control methods). The role of ND in improving the quality of medicines).	2	14
2	**2 lecture.** Standardization of medicines, normative documentation: State Pharmacopoeia, General Pharmacopoeia Articles, Pharmacopoeia Articles, Pharmacopoeia Articles of Enterprises.	1	
2	**Seminar lesson.** The concept of "dosage form". Classification of dosage forms.	2	14
3	**3 lecture.** Analytical quality assurance of medicines in accordance with the requirements of international standards. Good Manufacturing Practice (GMP). Basic elements, principles and requirements. Introduction to pharmaceutical practice.	1	
3	**Seminar lesson.** A system of measures at the stages of development, manufacture, distribution, transportation, storage and consumption, ensuring compliance of product quality indicators with the requirements of regulatory documents.	**2**	14
3	**SIWT Consultation on SIW implementation** To analyze the requirements for the quality of medicinal substances and dosage forms.	**1**	15

4	**4 lecture.** Evaluation of the benefit-risk ratio associated with the use of drugs.	1	
4	**Seminar lesson.** GMP system as a basis for drug production.	2	14
4	**SIWT Consultation on the implementation of the SIW** To analyze methods for assessing the ratio of "benefit - risk": quantitative, semi-quantitative and qualitative.	1	
5	**5 lecture.** Modern instrumental methods for controlling the quality of drugs and their importance in pharmaceutical analysis.	1	
5	**Seminar lesson.** Terms and definitions by OST.	2	14
5	**SIWT SIW protection** **SIW 1.** A list of standardized indicators or test methods for a specific dosage form, a description of physical, physicochemical, chemical, biochemical, biological, microbiological methods of drug analysis, requirements for the reagents used, titrated solutions, indicators.	1	15
5	**Checking Exam 1**		100
6	**6 lecture.**Pharmaceutical analysis of drugs - derivatives of phenolic acids.	1	
6	**Seminar lesson.**Nitritometry, bromatometry and iodometry in pharmaceutical analysis.	2	14
7	**7 lecture.**Pharmaceutical analysis of drugs - derivatives of paraaminophenol.	1	14
7	**Seminar lesson.**Soft dosage forms: ointments (the basis of ointments are lipophilic and hydrophilic), pastes, liniment, capsules, suppositories.		
	SIWT Consultation on SIW2 implementation Analysis of multicomponent drugs with preliminary separation of mixtures. Analysis of multicomponent drugs without prior separation of mixtures.		
8	**8 lecture**Pharmaceutical analysis of drugs derived from p-aminobenzoic acid	1	
8	**Seminar lesson.**Quantitative determination of drugs. Redox methods: iodometry, bromatometry, permanganometry.	2	14
9	**9 lecture.**Pharmaceutical analysis of drugs - pyrimidine derivatives.	1	
9	**Seminar lesson.**Acid base methodtitration in aqueous and non-aqueous media in the pharmaceutical industry.	2	14
10	**10 lecture.**Analysis of the quality of medicines and dosage forms - derivatives of sulfonic acids	1	
10	**Seminar lesson.**The use of chromatographic methods for the analysis of drugs.	2	14
10	**SIWT Reception tasks SIW2** Analysis of drugs by mass spectrometry. Sample injection system (GC / MS, LC / MS, supercritical fluid chromatography / MS, capillary electrophoresis / MS, device for direct injection of the sample).		15
	Colloquium		15
	(MidtermExam)		**100**
11	**11 lecture.** IR spectroscopy method in drug analysis. Types of IR spectrometers recommended by GF.	1	

11	**Seminar lesson.**Sample preparation methods for drug analysis by IR spectroscopy.	2	10
12	**12 lecture.** UV spectroscopy in pharmaceutical analysis of drugs. Methods for determining the authenticity of drugs and specific impurities.	1	
12	**Seminar lesson.** Quantitative analysis of drugs by spectrophotometric method. Choice of analytical wavelength, concentration range, working range of optical density, standard sample, choice of a comparison solution.	2	10
13	**13 lecture.** Mass spectrometry as a method of qualitative and quantitative analysis of drugs, based on direct measurement of the ratio of mass to the number of elementary positive or negative ion charges (m / z) in the gas phase, obtained from the test substance.	1	
13	**Seminar lesson.** Technical characteristics of mass spectrometers in the analysis of Lek. Means (LS) (scanning speed, resolution, dynamic range).	2	10
13	**SIWT reception** **SIW 3** to analyze the advantages and disadvantages of the spectrophotometry method in the UV and visible spectral regions.	3	15
14	**14 lecture.** Absorption spectroscopy in the quality control of drug substances and dosage forms.	1	
14	**Seminar lesson.** Comparative characteristics of the applicability of UV, visible and IR spectroscopy for solving pharmaceutical problems.	2	10
15	**15 lecture.** Chromatographic analysis methods in pharmaceutical analysis. HPLC (high performance liquid chromatography).	1	
15	**Seminar lesson.** Validation Parameters. The essence of the validation method.	2	10
15	**SIWT reception SIW4**Compare the analytical capabilities of the methods of IR, UV, mass spectrometry in the analysis of the quality of drugs.	3	15
	Colloquium		20
	Checking Exam 2		**100**
	Final Exam		100

Lecturer A.K. Kipchakbaeva

Head of Department G.A. Moon

Chairman of the methodical Bureau,
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