

MINISTRY OF PUBLIC HEALTH CARE OF UKRAINE

APPROVE

Acting Minister

of Ministry of Public Health Care of Ukraine

(signature) V. Shafransky

July 26, 2016

EXAMPLE CURRICULUM

**FOR TRAINING OF SPECIALISTS OF SECONDARY (MASTER'S) LEVEL OF
HIGHER EDUCATION IN KNOWLEDGE AREA 22 "HEALTH CARE"
IN THE HIGHER EDUCATIONAL INSTITUTIONS OF MPH OF UKRAINE
ACCORDING SPECIALTY 226 "PHARMACY"
QUALIFICATION OF EDUCATION "MASTER OF PHARMACY"**

<p>APPROVED Director of SE «Central Methodist Study Room for Higher Medical Education of the Ministry of Health of Ukraine» ____(signature)____ I.Melnyk July 22, 2019</p>	<p>APPROVED Acting Head of the Department of Education and Science of the Ministry of Health of Ukraine ____(signature)____ Y. Piatnitsky July 26, 2019</p>
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Kyiv

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**EXAMPLE CURRICULUM
for training of specialists of secondary (master's) level of
higher education in knowledge area 22 "Health Care"
in the higher educational institutions of MPH of Ukraine
according specialty 226 "Pharmacy"
qualifications of education "Master of Pharmacy"**

I. EXPLANATORY NOTE

1. Introduction

Pursuant to Article 10 of the Law of Ukraine dated 01.07.2014 No. 1556-VII "On Higher Education" (hereinafter referred to as the Law of Ukraine "On Higher Education") and for the purpose of implementing the Decree of the Cabinet of Ministers of Ukraine dated 04.29.2015 No. 266 "On approval of the list of branches of knowledge and specialties in which the training of applicants for higher education is carried out", an example curriculum for the training of specialists of the second (master's) level of higher education in the knowledge industry 22 "Health Care" in higher educational institutions of the Ministry of Health of Ukraine in specialty 226 "Pharmacy"» qualification of the educational "Master of Pharmacy " (hereinafter - the curriculum) has been developed. The specified curriculum was prepared on the basis of the draft higher education standard of the second (master) level of training for higher education applicants of the Master's degree in knowledge 22 "Health Care" in specialty 226 "Pharmacy" (hereinafter referred to as the Standard) prepared in pursuance of the order of the Ministry of Health of Ukraine No. 733 dated 11/09/2015 "On the creation of a coordination and working group to formulate a list of specializations and proposals for higher education standards in the specialties of the Health Care knowledge branch and approved about at the XIII All-Ukrainian scientific-practical conference with international participation "Topical issues of quality of medical education" (May 12-13, 2016, Ternopil) (hereinafter - the Conference).

This curriculum is developed taking into account the requirements of Article 13 "The powers of the Central Executive Body in the Field of Education and Science, Other Bodies to which the Higher Educational Institutions Belong", the Law of Ukraine "On Higher Education" to ensure the implementation of the work of higher education institutions of the Ministry of Health Of Ukraine (hereinafter - the HEI of the Ministry of Health of Ukraine), the requirements of the paragraph of the third part of the second article 56 and part seven of the chapter XV "Final and transitional provisions" of the Law of Ukraine "On Higher Education" and discussed at the meeting vice-rectors for Academic Affairs (first vice-rectors), held May 13, 2016 in the Conference.

The curriculum is built on the European credit transfer and accumulation system, which is focused on the possibility of recognizing students' achievements, regardless of their place of study and taking into account the requirements of the European Union Directive on the recognition of professional qualifications of 2005 (No. 2005/36 / EC as amended by European Union Directive No. 2013/55 / EU).

2. Basic principles of curriculum and organization of educational process.

The curriculum is built on the European credit transfer and accumulation system.

2.1. The European Credit Transfer and Accumulation System (hereinafter referred to as ECTS) is a system of transfer and accumulation of credits that are used in the European Higher Education Area to provide, recognize, confirm qualifications and educational components and promotes academic mobility of higher education applicants. The system is based on determining the academic workload of the applicant for higher education necessary to achieve certain learning outcomes and is taken into account in ECTS credits.

A credit of the European Credit Transfer and Accumulation System (hereinafter referred to as ECTS credit) is a unit for measuring the volume of the academic load of a higher education applicant, which is necessary to achieve certain (expected) learning outcomes. The volume of one credit is 30 hours. The load of one academic year is 60 ECTS credits. ECTS credit includes all types of student work: classroom, independent, preparation for certification, passing the integrated license examinations "Krok 1" and "Krok 2", practically-oriented exam, practical training, course work, etc.

Forms of organization of the educational process and control for each academic discipline (final module control, exams, differentiated credit, credits) are determined independently by the Ukrainian Ministry of Health by decision of the academic council of a higher educational institution.

Provided that a test-examination session is held at the university of the Ministry of Health of Ukraine, it should be noted that the duration of theoretical training during the training period is determined as the difference in its total duration (40 weeks in the academic year) and the duration of the examination session, which is determined from the calculation: at least 2/3 weeks for the exam. The form of final control is an exam, recommended for academic disciplines, which are part of the integrated exams "Krok 1" and "Krok 2" and attestation.

Assessment of academic disciplines, the form of control for which is the final modular control and credit, regardless of the form of organization of the educational process, should be carried out taking into account the Instructions for assessing the educational activities of students in the context of the introduction of the European credit and transfer system for organizing the educational process, approved by the Ministry of Health of Ukraine 04.15.2014.

2.2. The list and number of disciplines of the curriculum is developed taking into account the acquisition by higher education applicants of integrated, general and special competencies according to the Standard.

2.3. The curriculum is structured in ECTS credits.

2.4. Students choose elective courses according to the curriculum on the principles of liberal education and academic responsibility. The organization of the study of elective courses of the university of the Ministry of Health of Ukraine determines independently by decision of the academic council of a higher educational institution.

According to the requirements of paragraph 15 of Article 62 of the Law of Ukraine "On Higher Education", applicants for higher education have the right to choose academic disciplines of at least 25% of the total number of ECTS provided for the second (master) level of higher education (taking into account specializations).

2.5. Applicants to higher education have the right to choose a specialization in the 3rd year of study from the list approved by the academic council of the university.

2.6. Individual tasks (course papers, calculation works, etc.) are established by a higher educational institution and are included in the body of the main discipline.

Pharmaceutical practice of the 5th-year is included in the compulsory training cycle.

2.7. The curriculum takes into account the requirements of the European Union Directive on the recognition of professional qualifications of 2005 (No. 2005/36 / EC as amended by the European Union Directive No. 2013/55 / EC), according to which the duration of full-time basic (undergraduate) training of pharmacists should be at least 5 years and 9000 hours at a higher education institution.

3. Key points

3.1. The curriculum is based on: 5 years of study or 300 ECTS credits. One academic year lasts 40 weeks and includes 60 credits (1 week - 1.5 ECTS credits); 1 ECTS loan is 30 academic hours. The academic year consists of 1800 academic hours.

The total academic load includes time for lectures, practical, seminars and laboratory classes, consultations, practices, independent and individual work and monitoring activities.

The weekly classroom load for students is 19.9-24.5 academic hours. The volume of independent work - in the range from 1/2 to 2/3 of the total amount of discipline.

3.2. The schedule of the educational process of 1-5 years of study mainly consists of two academic semesters.

In the schedule it is recommended (if necessary) to provide an additional period for the completion of the study of individual modules in the disciplines (their conversion, rating upgrades, etc.) - 1-2 weeks after the end of the semester in 1-4 courses. Within this period, after the third year, a licensed integrated exam "Krok 1" is required.

The tenth semester in the 5th year of study provides, in addition to teaching students, preparation for attestation of graduates and its implementation.

3.3. The capacity of the study of humanitarian and socio-economic disciplines is determined by the university of the Ministry of Health of Ukraine independently by decision of the academic council of a higher educational institution, taking into account the requirements of the relevant orders and instructions of the Ministry of Education and Science of Ukraine. Physical education is not included in the total number of ECTS loans; forms of the final control do not have; can be organized in accordance with the following basic models or various forms of their association: special; professionally oriented; traditional individual, taking into account the clarifications of the Ministry of Education and Science of Ukraine in a letter dated September 25, 2015 No. 1 / 9-454.

3.4. The list and names of disciplines of the curriculum are formed in accordance with their names in the curriculum of pharmaceutical faculties and universities of Europe and provide mastery by higher education applicants of integrated, general and special (professional) competencies according to the Standard.

3.5. Practical training of students is carried out in the form of educational practice and industrial (undergraduate) practice.

3.6. The schedule of studies is recommended as follows: for 1-3 years of study - according to the "tape" or block-modular or mixed principles; for 4-5 years of study - on a modular-cyclic principle by rotation of modules.

3.7. Graduation attestation includes a standardized test exam "Krok 2" and a practically-oriented final exam and / or defense of a thesis.

Credits are not applied for final certification.

The standardized test exam - a licensed integrated exam - consists of two test exams, "Krok 1" and "Krok 2". "Krok 1" test exam is an integrated exam that is conducted after 3 years of study and measures the quality indicators of the professional components of basic higher education. "Krok 2" test exam is a component of the attestation of graduates of higher medical educational institutions and measures the quality indicators of the professional component of a complete higher medical education.

The practice-oriented exam consists of the following disciplines: Pharmaceutical Chemistry, Pharmacognosy, Drug Technology, Clinical Pharmacy, Management and Economics in Pharmacy. The form of its conduct is determined by the higher educational institution.

3.8. The specified curriculum is an example, the academic council of a higher educational institution can make changes in the distribution of hours between disciplines within 15% of the total number of hours. At the same time, the content of educational disciplines should be assimilated taking into account the programs of these disciplines approved by the Ministry of Health of Ukraine.

3.9. The discipline "Training of reserve officers" of the branch of knowledge "Health Care" of the specialty "Pharmacy" is carried out in accordance with the program developed by specialists of the Ministry of Defense of Ukraine, which is taught for 2-4 years of study. The total capacity of the discipline is 29 credits, but all students are required to study 3 ECTS credits (90 hours, of which 50 are classroom), which are included in this sample curriculum.

When studying the discipline "Training of reserve officers" in the field of knowledge "Health Care" of the specialty "Pharmacy", it should be taken into account that the military training program for citizens consists of two sections: "Military-oriented modules" and "Military training".

The first section "Military-oriented modules" includes modules of 3 credits, which are included in this sample curriculum. This section is studied by all applicants for higher education at the HEI of the Ministry of Health of Ukraine, regardless of the citizen's need for studying military training under the program of reserve medical officers.

The second section of the discipline "Training of reserve officers" in the field of knowledge "Health Care" of the specialty "Dentistry" with the capacity of 26 credits is studied by citizens on a voluntary basis at the expense of individuals or by state order at the expense of the state budget.

Director of SE «Central

Methodist Study Room for Higher

Medical Education of the MH of Ukraine»

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I.Melnyk

II. Curriculum
of Masters' training in specialty 226 «Pharmacy»
2.1. according to years of study
1st year of study: academic weeks – 40

	Title of the subject	ECTS credits	Total	in Class	Amount of hours			I W
					Lectures	Seminars	Practical	
1	Foreign Language	3	90	50	0		50	40
2	Ukrainian Language (professional)	3	90	30	0		30	60
3	History of Ukraine and Ukrainian culture	3	90	30	20	10	0	60
4	Latin Language	3	90	60	0		60	30
5	Philosophy	3	90	40	20	20	0	50
6	Biology with Fundamentals of Genetics	4	120	70	20		50	55
7	Biologic Physics with Physical Methods of Analysis	4,5	135	80	20		60	55
8	Higher Mathematics and Statistics	3,5	105	70	20		50	35
9	Human Anatomy and Physiology	5	150	100	30		70	50
10	Ethics and Deontology in Pharmacy	3	90	40	10	30	0	50
11	Introduction to Pharmacy	3	90	60	20	20	20	30
12	General and inorganic Chemistry	6	180	110	30		80	70
13	Life safety; Fundamentals of Bioethics and Biosafety	3	90	40	24		16	50
14	Elective Courses	13	390	120	40	80	0	270
15	Physical education		160	30	0		30	130
Total for 1st year		60,0	1960	930	254	160	516	1035
Average number of acad. hours per week				23,3			12,9	25,9

Elective courses. 1. English. 2. History of Modern World. 3. European Standard of Computer Literacy. 4. Culture of Scientific Language. 5. Religion Studies. 6. Logics. 7. Valeology. 8. Cellular Biology. 9. Bioactivity of Inorganic Compounds. 10. Modern Issues of Molecular Biology. 11. Effective and Safe Methods of Chemical Researches. 12. Work with information sources. 13. Fundamentals of System analysis.

2nd year of study: academic weeks – 40

	Title of the subject	ECTS credits	Total	in Class	Amount of hours			I W
					Lectures	Seminars	Practical	
1	Foreign Language (professional)	3	90	30	0		30	60
2	Physical and Colloid Chemistry	4	120	90	30		60	30
3	Information Technologies in Pharmacy	5	150	70	10		60	80
4	Pathologic Physiology	5	150	80	30		50	70
5	Pharmaceutical Botany	5	150	80	10		70	70
6	Microbiology with fundamentals of immunology	5	150	90	20		70	60
7	Hygiene in Pharmacy and Ecology	3	90	40	20		20	50
8	Organic Chemistry	8	240	150	30		120	90
9	Analytic Chemistry	8	240	150	30		120	90
10	First Pre-Medical Aid with Medical Practice	3	90	50	10		40	40
11	Educative Practice in Pharmaceutical Botany	3	90	30	0		30	60
12	Elective Courses	8	240	80	40	40		160
13	Physical Education		160	30	0		30	130
Total for 2nd year		60,0	1960	970	230	40	700	990
Average number of acad. hours per week				24,3			17,5	24,8

***Elective courses.** 1. Ethics and Esthetics. 2. Politology. 3. English Language. 4. Sociology. 5. Psychology of Communication. 6. Fundamentals of Pedagogics. 7. European Standard of Computer Literacy. 8. Medical Physics. 9. Theoretic Fundamentals of Drugs. 10. Fundamental of Chemical Metrology. 11. Medicinal Plants Cultivating. 12. Applied Genetics. 13. Diseases Epidemiology. 14. Tropical Diseases. 15. Pathophysiology of Civilization Diseases. 16. Modern Analytic Laboratory Practice. 17. Principles of calculative Chemistry and Molecular Modelling. 18. Fundamentals of Customers' Behavior in Pharmacy.*

3rd year of study: academic weeks – 40

	Title of the subject	ECTS credits	Total	in Class	Amount of hours			I W
					Lectures	Seminars	Practical	
1	Drug Technology	6	180	110	20		90	70
2	Pharmaceutical Chemistry	6	180	110	20		90	70
3	Pharmacognosy	8,5	255	170	30		140	85
4	Biologic Chemistry	6	180	100	30		70	80
5	Computer Modelling in Pharmacy	3	90	40	4		36	50
6	Pharmacology	8,5	255	170	30		140	85
7	Pharmaceutical Law and Legislation	3	90	50	20		30	40
8	Emergency Medicine	3	90	30	10		20	60
9	Training of reserve officers of the branch of knowledge "Health Care". Specialty «Pharmacy»	3	90	50	0		50	40
10	Elective courses in specialization	12	360	120	40	40	40	240
11	Step 1	1	30					
Всего за 3-й год		60,0	1800	950	204	40	706	820
Average number of acad. hours per week				23,8			17,7	20,5

Attestation (1 week) 40th week of sixth semester: standardized test (licensed integrated) exam «Step 1. Pharmacy»

Elective courses in specialization:

Pharmacy – Fundamentals of Economy; Homeopathic Drugs; Immunoprophylaxis of Infectious Diseases; Physic-Chemical Analysis in Drugs' Creating; Pharmaceutical Aspects of Toxicomania and Narcology; Functional Biochemistry; Theoretic Bases of Synthesis; Modern Research methods of Biologic Systems.

Clinical Pharmacy – Fundamentals of Clinical Medicine; Clinical Pharmacology; Clinical Biochemistry; Pharmacogenetics; Clinical Research of Drugs.

Technology of Cosmetics – Fundamentals of Practical Cosmetology; Manipulation Techniques; Dermatology; Aromalogy; Cometic Chemistry.

Industrial Pharmacy – Electrical Technique and Bases of Electronics; Applied Mechanics; Processes and Equipment of Pharmaceutical Industry; Automatization of Chemistry Technological Processes; General Chemical Technology.

4th year of stud: academic weeks – 40

	Title of the subject	ECTS credits	Amount of hours					
			Total	in Class	Lectures	Seminars	Practical	I W
1	Pharmaceutical Chemistry	4	120	90	20		70	30
2	Clinical Pharmacy and Pharmaceutical Care	6	180	100	20		80	80
3	Drug Technology	6	180	100	20		80	80
4	Pharmaceutical Management and Marketing	3	90	50	10		40	40
5	Organization and Economics of Pharmacy	6	180	100	30		70	80
6	Pharmacotherapy and Pharmacokinetics	3	90	40	10		30	50
7	Pharmaceutical and Medical Commodity Science	4	120	50	20		30	70
8	Toxicological and Forensic Chemistry	4	120	90	20		70	30
9	Drug Toxicology	3	90	40	10		30	50
10	Pharmacoeconomics	3	90	30	6		24	60
11	Labour Protection and Labour Protection in Pharmacy	3	90	40	10		30	50
12	Educational Practice in Pharmacognosy	3	90	30	0		30	60
13	Elective courses and Practices in specialization	12	360	230	110		120	130
Total for 4th year		60,0	1800	990	286		704	810
Average number of acad. hours per week					24,8		17,6	20,3

Elective courses in specialization:

Pharmacy. Practice in Drug Technology. Subjects in Specialization: International Marketing in Pharmacy; Pharmaceutical Aid in Oncology; Drugs Side Effects; Intellectual Property; Laboratory Diagnostics; Nutrition and Bromatology; Social Interaction: pharmacist-doctor-patient; Fundamentals of Insurance Medicine; Drugs Design.

Clinical Pharmacy. Practice in Clinical Pharmacy and Pharmaceutical Care. Subjects in Specialization: Insurance Medicine; General pharmacokinetics; Evidence Medicine; Medical Chemistry; Pharmaceutical Care with Clinical Pharmacy; Laboratory and Functional Diagnostics; Immunopharmacology.

Technology of Cosmetics. Practice in Drug Technology. Subjects in Specialization: Cosmetology; Methods of Correction Techniques; Apparatus Cosmetology; Clinical COSmetology; Cosmetic Technology; Remedies of Medicinal Cosmetics; Administration and Economics of Cosmetic Industry.

Industrial Pharmacy. Practice in Industrial Drug Technology.

5th year of Study: academic weeks – 40

	Название учебной дисциплины	Кредит ЕКТС	Total	in Class	Amount of hours			I W
					Lectures	Seminars	Practical	
1	Pharmaceutical Chemistry	3	90	50	10		40	40
2	Resource Study of Medicinal Plants	3	90	50	10		40	40
3	Pharmaceutical Biotechnology	3	90	50	20		30	40
4	Quality Systems in Pharmacy	3	90	50	20		30	40
5	Pharmaceutical Management and Marketing	3	90	50	10		40	40
6	Clinical Pharmacy and Pharmaceutical Care	3	90	50	10		40	40
7	Biopharmacy	3	90	50	10		40	40
8	Drug Standardization	3	90	50	10		40	40
9	Social Pharmacy	3	90	40	10		30	50
10	Technology of Cosmetics	3	90	40	10		30	50
11	Clinical Practice (Specialization) Step 2	30	900	300	0		300	600
Total for 5th year		60,0	1800	780	120		660	1020
Average number of acad. hours per week				19,5			16,5	25,5

Attestation (5 weeks): standardized test (licensed integrated) exam «Step 2. Pharmacy», graduation exams and/or Master's thesis in specialization

2.2. according the cycles of Training

№ №	Название учебной дисциплины	Credits	Amount of hours			dist-n in years				
			total	class	IW	1	2	3	4	5
1	2	3	4	5	6					
Humanities and Social Economic Training										
1	Foreign Language (professional)	3	90	30	60	*				
2	History of Ukraine and Ukrainian culture	3	90	30	60	*				
3	Foreign Language	3	90	50	40					
4	Philosophy	3	90	40	50	*				
	<i>Bcezo</i>	12	360	150	210					
Natural Training										
5	Foreign Language (professional)	3	90	30	60		*			
6	Higher Mathematics and Statistics	3,5	105	70	35	*				
7	Biologic Physics with Physical Methods of Analysis	4,5	135	80	55	*				
8	Biology with Fundamentals of Genetics	4	120	70	50	*				
9	Human Anatomy and Physiology	5	150	100	50	*				
10	Latin Language	3	90	60	30	*				
11	Microbiology with fundamentals of immunology	5	150	90	60		*			
12	Information Technologies in Pharmacy	5	150	70	80		*			
13	Pathologic Physiology	5	150	80	70		*			
14	Organic Chemistry	8	240	150	90		*			
15	General and inorganic Chemistry	6	180	110	70	*				
16	Analytic Chemistry	8	240	150	90		*			
17	Pharmaceutical Botany	5	150	80	70		*			
18	Biologic Chemistry	6	180	100	80			*		
19	Computer Modeling in Pharmacy	3	90	40	50			*		
	<i>Bcezo</i>	74	2220	1280	940					
Professional Training										
20	Hygiene in Pharmacy and Ecology	3	90	40	50		*			
21	Ethics and Deontology in Pharmacy	3	90	40	50	*				
22	Drug Technology	12	360	210	150			*	*	
23	Life safety; Fundamentals of Bioethics and Biosafety	3	90	40	50	*				
24	Emergency Medicine	3	90	30	60			*		
25	Introduction to Pharmacy	3	90	60	30	*				
26	Pharmacognosy	8,5	255	170	85			*		
27	Pharmacotherapy and Pharmacokinetics	3	90	40	50				*	
28	Pharmacology	8,5	255	170	85			*		
29	Pharmaceutical Chemistry	13	390	250	140			*	*	*
30	Physical and Colloid Chemistry	4	120	90	30		*			
31	Pharmacoeconomics	3	90	30	60				*	
32	Resource Study of Medicinal Plants	3	90	50	40					*
33	Organization and Economics of Pharmacy	6	180	100	80				*	
34	Clinical Pharmacy and Pharmaceutical Care	9	270	150	120				*	*
35	Pharmaceutical and Medical Commodity Science	4	120	50	70				*	
36	Pharmaceutical Management and Marketing	6	180	100	80				*	*
37	Toxicological and Forensic Chemistry	4	120	90	30				*	
38	Drug Toxicology	3	90	40	50				*	
39	Biopharmacy	3	90	50	40					*
40	Quality Systems in Pharmacy	3	90	50	40					*
41	Drug Standardization	3	90	50	40					*
42	Technology of Cosmetics	3	90	40	50					*
43	Pharmaceutical Biotechnology	3	90	50	40					
44	Social Pharmacy	3	90	40	50					*
45	Labour Protection and Labour Protection in Pharmacy	3	90	40	50				*	
46	Pharmaceutical Law and Legislation	3	90	50	40			*		
47	Training of reserve officers of the branch of knowledge "Health Care". Specialty «Pharmacy»	3	90	50	40			*		
	<i>total</i>	129	3870	2170	1700					
Practical Training										
48	First Pre-Medical Aid with Medical Practice	3	90	50	40		*			
49	Educative Practice in Pharmaceutical Botany	3	90	30	60		*			
50	Educational Practice in Pharmacognosy	3	90	30	60				*	

51	Physical Education		320	60	260	*	*			
52	Elective courses	21	630	200	430	*	*			
53	Elective courses in specialization	24	720	350	370			*	*	
54	Clinical Practice (Specialization	30	900	300	600					*
55	Attestation	1	30					*		*
	Всього за 5 лет	300	9320	4620	4670					

Director of
State Organization "Center for Testing
Professional Competence of Professionals
with Higher Education in the Areas of Training
"Medicine" and "Pharmacy"
at the Ministry of Health of Ukraine"

(signature)

I.E.Bulah