Syllabus for propaedeutic practical training on drug technology in pharmacy

1. General information	
Faculty	Pharmacy
Educational program	22 Healthcare, 226 Pharmacy, 2nd (master's) level of higher education, full-time study
Educational discipline, code	Propaedeutic practical training on drug technology in pharmacy, OK 46 http://new.meduniv.lviv.ua/
Department	Department of Drug Technology and Biopharmaceutics; 79010, Lviv, Pekarska str.,75 (032) 276-85-84, (032) 276-85-98, Kaf_biopharm@ meduniv.lviv.ua
Head of the depratment	Bilous Svitlana B, DSci, assoc. prof. svitlana.bilous@gmail.com
Academic year	1st
Semester	2nd
Type of discipline	obligatory
Educators	Bilous S.B., DSci, assoc.prof., svitlana.bilous@gmail.com Vashchenko O.O, PhD, assoc.prof., o_vashchenko@ukr.net Hudz N.I., DSci, assoc.prof., natali_gudz@ukr.net Yezerska O.I., PhD, assoc.prof., o.yezerska@gmail.com Strus O.Ye., DSci, assoc.prof., oxana.strus@ukr.net
Erasmus	No
Person responsible for syllabus	Vashchenko O.O., PhD, assoc.prof., o_vashchenko@ukr.net
Number of credits ECTS	1.5
Number of hours	Total - 45 h
Language of instruction	English
Information on consultations	Consultations are provided in accordance with schedule of consultations by the responsible educators

2. A brief review of the practical training

Propaedeutic practical training on drug technology in pharmacy is an initial stage at forming professional knowledge, skills and abilities of future Master of Pharmacy. Practical training includes familiarization with requirements for sanitary conditions in pharmacy and personal hygiene of personnel, with technological process of preparing drug products, packaging preparations and preparing them for dispensing

3. Purpose and objectives of the practical training

Purpose of propaedeutic practical training on drug technology in pharmacy is familiarization with principles of sanitary and anti-epidemic regime in pharmacy and personal hygiene of pharmacy staff, preparatory activities and technological processes of preparing different drug products in pharmacy conditions, packaging of these preparations and preparing for dispensing.

Primary objectives of propaedeutic practical training on drug technology in pharmacy are:

- familiarization with the statements of current normative documents that regulate conditions and rules for preparing and storage of drug products in pharmacies;
- learning of technological operations of preparing, packaging and labeling of different dosage forms.

According to the Standard of Higher Education, propaedeutic practical training provides gaining the following **competencies**: integrative and professional (pharmaceutical competencies in the healthcare, competencies in the pharmaceutical care, professional and personal competencies, competencies in the assurance and management of quality).

Integrative:

- ability to solve typical and complex specialized issues and practical problems in the learning process, that involves the research and innovation performance and it is charactetized by complexity and uncertainty of conditions and requirements.

General:

- The ability to act in socially and civil responsible manner.
- The ability to use knowledge in practical situations.
- The ability for abstract thinking, analysis and synthesis, to learn and to be learned.
- The ability to show initiative and entrepreneurship.
- The knowing and understanding of subject field and the understanding of profession.
- The ability to adapt and act in a new situation.
- The ability to communicate in the native language in both spoken and written ways. The ability to communicate in other language that provides an effective professional activity.
- The ability to use information and communication technologies.
- The ability to choose communication strategy, to work in team and with experts from other fields of knowledge / types of economic activity.
- The ability to realize the rights and responsibilities as a member of society, to understand the value of civil (independent democratic) society and the necessity for its stable growth, to understand the rule of law, civil and human rights and liberties in Ukraine.

Specific (professional, objective):

- The ability to ensure proper storage of medicinal preparations and medical devices with regard to the physical and chemical properties and Good Storage Practice (GSP) in healthcare facilities.
- The ability to use knowledge of laws and regulations and the recommendations of good pharmaceutical practices in the professional activities.
- The ability to demonstrate and apply communication skills in the professional activities, fundamental principles of pharmaceutical ethics and deontology, which are based on moral obligations and values, ethical standards of professional behavior and responsibility in accordance with the Code of Ethics for Pharmaceutical Workers of Ukraine and WHO guidelines.

4. Prerequisites of the practical training

Propaedeutic practical training on drug technology in pharmacy:

a) it is based on the learning by students the physical and physical-chemical methods of analysis, higher mathematics, physical and colloid chemistry, biology, history of pharmacy;

b) It contributes to forming the basic knowledge and gaining the practical skills for further learning of such disciplines as formulated technology of medicines, industrial technology of medicines, pharmacognosy, organization and economics of pharmacy, pharmaceutical chemistry and others.

c) It gives the foundations for the professional training of future specialists, and promotes the formation of pharmaceutical and technical thinking.

5. Program learning outcomes

List of learning outcomes

Code of learning outcome	Content of learning outcome	Reference to the code of the competency matrix

* ***Kn*** *– knowledge,* ***Ab*** *– ability,* ***Sk*** *– skills,* ***C*** *– competence,* ***AR*** *– autonomy and responsibility,* ***LO*** *– learning outcome*

Kn-1	To have specialized conceptual knowledge acquired in the learning process	*LO-1, LO -2*
Kn-2	To have deep knowledge of the structure of professional activity	*LO-1*
Kn-3	To know ways for self-regulation, leading a healthy life	*LO-5, LO-6, LO-7*
Kn-4	To know the tactics and strategies of communication, laws and ways of communicative behavior	*LO-8, LO-9, LO-10*
Kn-5	To have advanced knowledge of native language and basic knowledge of foreign language	*LO-8*
Kn-6	To have deep knowledge in the field of information and communication technologies used in professional activities	*LO-9, LO-12*
Kn-7	To know the methods of analysis, synthesis and further modern learning	*LO-4, LO-6*
Kn-8	To know methods for evaluation of work quality	*LO-9, LO-11*
Kn-9	To know the responsibilities and ways to accomplish the tasks	*LO-5, LO-12*
Kn-10	To know the basics of the legal system and pharmaceutical legislation	*LO-3, LO-24*
Kn-11	To know the conditions in healthcare facilities of proper storage of medicines and other products of the pharmacy range in accordance with the physical and chemical properties and the rules of Good Storage Practice (GSP)	*LO-24, LO-32*
Sk-1	To be able to solve complex issues and issues that arise in the professional activities	*LO-1, LO-2, LO-4*
Sk -2	Be able to carry out professional activity that requires updating and integrating of knowledge	*LO-2, LO-6, LO-9*
Sk -3	To be able to apply methods of self-regulation, to be able to lead a healthy life and to adapt to new situations of life and activity	*LO-3, LO-25*
Sk -4	To be able to choose ways and strategies of communication to ensure effective teamwork	*LO-8, LO-10,*
Sk -5	To be able to apply knowledge of the native language, both orally and in writing, to be able to communicate in a foreign language	*LO-8*
Sk -6	To be able to use information and communication technologies in the professional field, which requires updating and integration of knowledge	*LO-9, LO-12*
Sk -7	To be able to analyze information, to make informed decisions, to be able to acquire modern knowledge	*LO-4, LO-6*
Sk -8	To be able to ensure quality performance of the work	*LO-9, LO-11*
Sk -9	To be able to set goals and objectives, to be persistent and conscientious in the performance of responsibiliteis	*LO-1, LO-4, LO-24*
Sk -10	To be able to use laws and other normative documents that regulate pharmaceutical activity in Ukraine and abroad	*LO-24*
Sk -11	To be able to create conditions in healthcare facilities for proper storage of medicines and other products in accordance with the physical and chemical properties and the rules of Good Storage Practice (GSP)	*LO-19, 32*

C-1	To give the conclusions and explanations clearly and unambiguously to specialists and non-specialists	*LO-1, LO-5*
C -2	To form effectively a communication strategy in the professional activities	*LO-2, LO-10*
C -3	To establish appropriate connections to achieve results	*LO-6, LO-10*
C -4	To use communication strategies and interpersonal interaction skills	*LO-8, 9, 10*
C -5	To use native language in the professional and business communications and for the preparation of documents	*LO-8*
C -6	To use foreign language in the professional activities	*LO-8, 12*
C -7	To use information and communication technologies in the professional activities	*LO-4,12*
C -8	To establish connections for ensuring the quality work performance	*LO-1, 10, 25*
C -9	To be able to convey one's public and social position	*LO-4, 6*
C -10	To use knowledge of laws and other normative documents which regulate pharmaceutical activity in Ukraine and abroad	*LO-24*
C -11	To carry out a constant monitoring of proper storage of medicines and other products in healthcare facilities in accordance with the physical and chemical properties and the rules of Good Storage Practice (GSP)	*LO-19, 25*
AR-1	To be responsible for making decisions in difficult conditions	*LO-6*
AR-2	To be responsible for professional development, ability to further professional training with a high level of autonomy	*LO-7,9*
AR-3	To be responsible for a healthy lifestyle and timely use of self-regulation methods	*LO-3*
AR-4	To be responsible for the choice and tactics of communication	*LO-8, 10, 12*
AR-5	To be responsible for fluent knowledge of the native language, and the development of professional knowledge	*LO-8, 10,12*
AR-6	To be responsible for the development of professional knowledge and skills	*LO-9, 12*
AR-7	To be responsible for the timely gaining of modern knowledge	*LO-4,12*
AR-8	To be responsible for the quality performance of the work	*LO-9, 11*
AR-9	To be responsible for the quality performance of the tasks	*LO-5*
AR-10	To be responsible for the quality and timely use of normative documents in the professional activities	*LO-3, LO-24*
AR-11	To beresponsible for the proper storage of medicines and other products in healthcare facilities in accordance with the physical-chemical properties and the rules of Good Storage Practice (GSP)	*LO-32*

6. Mode and scope of the practical training

Forma of the dicspline	Full-time study	
Type of activity	Number of hours	Number of groups
lections		
practical	45	
seminars		
independent		

7. Topics and content of the practical training			
Code of activity type	Topic	Learning content	Code of learning outcome
P-1 1 day	General familiarization with production rooms in pharmacy, Sanitary and anti-epidemic regime, pharmaceutical conditions	Passing the briefing on safety awareness, sanitary measures and pharmaceutical order. General familiarization with production rooms in pharmacy. Sanitary and anti-epidemic regime, pharmaceutical conditions. Production rooms of pharmacy, normative requirements and cleaning. Personal hygiene of personnel. Methods for receiving purified water, its quality control and storage conditions. Pharmacopoeial requirements to purified water	*Kn -1, Kn -2, Kn -4 Kn -9;* *Sk-1, Sk-2, Sk-6, Sk-10;* *C-2, C-3, C-7, C-10, C-11;* *AR-1, AR-6, AR-7, AR-8, AR-9, AR-10, AR-11*
P-2 1 day	Familiarization with dosing in pharmacy practice	Dosing in pharmacy practice. Weight measuring devices that are used in pharmacy practice. Normative requirements for deviations allowed in dispensing of drug preparations	*Kn -1, Kn -2, Kn -7, Kn -10;* *Sk-1, Sk-2, Sk-6, Sk-10, Sk-11;* *C-2, C-3, C-7, C-10, C-11;* *AR-1, AR-6, AR-7, AR-8, AR-9, AR-10, AR-11*
P-3 1 day	Familiarization with general requirements for preparing non-sterile preparations in pharmacy	General requirements for preparing non-sterile preparations in pharmacy conditions. Dosing and packaging of solid and liquid preparations, semi-solid preparations for cutaneous application, vaginal and rectal suppositories. Pharmacopoeial requirements to compounded preparations	*Kn -1, Kn -2, Kn -7, Kn -10, Kn -11;* *Sk-1, Sk-2, Sk-6, Sk-10, Sk-11;* *C-2, C-3, C-7, C-10, C-11;* *AR-1, AR-6, AR-7, AR-8, AR-9, AR-10, AR-11*
P-4 1 day	Familiarization with general requirements for preparing sterile preparations in pharmacy	General requirements for preparing sterile preparations in pharmacy. Providing of aseptic conditions. Methods of sterilization. Workplace of pharmacist, who compounds intra-pharmacy half products. Nomenclature of intra-pharmacy half products. Labor saving devices for preparing intra-pharmacy half products	*Kn -1, Kn -2, Kn -7, Kn -10, Kn -11;* *Sk-1, Sk-2, Sk-6, Sk-10, Sk-11;* *C-2, C-3, C-7, C-10, C-11;* *AR-1, AR-6, AR-7, AR-8, AR-9, AR-10, AR-11*
P-5 1 day	Study of the basic types of containers and packaging materials for different dosage forms	Modern types of containers and packaging materials for different dosage forms; requirements to pretreatment, washing and drying of pharmacy utensils. Types of labels (basic, additional, preventive) and their selection for dispensing of compounded preparations in accordance with administration	*Kn-1, Kn -2, Kn -7, Kn -10, Kn -11;* *Sk-1, Sk-2, Sk-6, Sk-10, Sk-11;* *C-2, C-3, C-7, C-10, C-11;* *AR-1, AR-6, AR-7, AR-8, AR-9, AR-10, AR-11*

The practical training is undertaken in pharmacies, a list of literature sources for independent work is given

8. Verification of learning outcomes			
Current control			
Code of learning outcome	Code of activity type	Method of the verification of learning outcomes	Evaluation criteria
Kn-1 – Kn-11; *Sk-1– Sk-11;* *C-1 – C-11;* *AR-1 – AR-11*	*P-1 – P-5*	Current control of propaedeutic practical training is conducted by the immediate supervisor of practical training from pharmacy. Report on practical training is the main document of student's performance during the practical training, acquisition of practical skills and abilities, implementation of practical training plan. Student should clearly document and describe in the report the all performed types of work determined by the program of practical training. Supervisor of practical training from pharmacy examines records in the report, and evaluates skills and practical abilities. Evaluation of current educational activity of student is performed using 4-graded (traditional) scale, which is then converted into the points.	*Evaluation criteria* *Excellent* ("5") – student solved given task in a correct, logical and full manner. Student connects theory with practice, can generalize material, and demonstrates correct performance of practical skills; *Good* ("4") – student completed given task correctly, demonstrates practical skills with slight mistakes. Student puts theoretical knowledge to good use for solving the practical tasks, can solve low and medium level tasks, has practical skills and abilities in a scope that exceedes a required minimum; *Satisfactory* ("3") – student performed given tasks incompletely and not clearly, student solved only the easiest tasks. Student makes significant mistakes when demonstrating the practical skills and acquired only a minimum of technological knowledge; *Fail* ("2") – student completed less than 50% of given tasks of practical training. Student is not able to give logical answers and does not understand content of material. Student makes essential mistakes when demonstrating practical skills. *Maximum score* that student can get for current educational activity is 120 points (24x5). *Minimum score* that student

			can gain for current educational activity to be allowed to pass graded credit is 72 points (24x3)

Final control		
General system of evaluation	Form of final control is a graded credit	
Evaluation scales	Traditional 4-graded scale, multipoint (200-point) scale, rating ECTS scale	
Conditions to be allowed to write the final control	To write final control are allowed students who performed the all types of activities determined by the educational program and scored for current educational activity not less than minimum (72 points).	
Type of final control	Procedure of final control	Evaluation criteria
Graded credit	Final control is conducted in a written form. The form is standardized and includes tests and situation tasks. To write final control are allowed students, who have acquired the required practical abilities, provided reported documents and scored for current educational activity not less than minimum (72 points).	*Maximum score* that student can get for final control is 80 points. *Minimum score* that student can gain for final control to pass credit is 50 points. *Mark for propaedeutic practical training on drug technology in pharmacy* is calculated as sum of points for current educational activity (not less than 72) and for final control (not less than 50). Points for practical training are then converted in traditional 4-graded scale using absolute criteria.

9. Policy of practical training

To organize the educational process, students, educators and administration act in accordance with:

- Regulations on the organization of the educational process (https://cutt.ly/3ySk64r);
- Regulations on the criteria and rules for evaluation (https://cutt.ly/lySlyw0);
- Regulations on academic integrity (https://cutt.ly/EySkNHu)

10. Literature

Required

1. Державна Фармакопея України: в 3 т. / Державне підприємство «Український науковий фармакопейний центр якості лікарських засобів». – 2-е вид. Харків: Державне підприємство «Український науковий фармакопейний центр якості лікарських засобів», 2016. – Т. 1. - 1128 с., Т. 2. - 724 с., Т. 3. – 732 с.
2. Закон України № 123/96 - ВР від 04.04.96 “Про лікарські засоби”.
3. Наказ МОЗ України № 44 від 16.03.1993 р., “Про затвердження Інструкції по організації зберігання в аптечних установах різних груп лікарських засобів та виробів медичного призначення”.
4. Наказ МОЗ України № 275 від 15.05.2006 р. “Про затвердження Інструкції із санітарно-протиепідемічного режиму аптечних закладів”.

5. Наказ МОЗ України № 812 від 17.10.2012 р. „Про затвердження Правил виробництва (виготовлення) та контролю якості лікарських засобів в аптеках”.
6. Наказ МОЗ України № 500 від 20.07.2006 р. “Про затвердження Переліків назв лікарських форм та упаковок для лікарських засобів”.
7. Постанова КМ України № 906 від 04.10.2010 р. „Про затвердження форми паспорта аптечного закладу (структурного підрозділу)”.
8. Фармацевтичне законодавство (Нормативні акти з організації роботи аптечних підприємств) // Під редакцією проф. Т.А.Грошового. – Тернопіль: Укрмедкнига, 2012. – 569с.

Additional

Information sources

Верховна Рада України	www.rada.gov.ua
Міністерство охорони здоров'я України	www.moz.gov.ua
Державний експертний центр МОЗ України	www.pharma-center.kiev.ua
Спеціалізоване медичне інтернет-видання для лікарів, провізорів, фармацевтів, студентів медичних та фармацевтичних вузів	www.morion.ua
Фармацевтична енциклопедія	www.pharmencyclopedia.com.ua

11. Equipment, material, technical, and software support of the practical training

Educational and methodical materials, laboratory equipment and apparatus

12. Additional information

Responsible person for the educational process at the Department – Yakymiv O.V., PhD, assoc.prof., e-mail: olga_yakymiv@ukr.net

Responsible person for the propaedeutic practical training on drug technology in pharmacy – Vashchenko O.O., PhD, assoc.prof., e-mail: o_vashchenko@ukr.net

Final control on the propaedeutic practical training is carried out in the rooms of the department at: Lviv, Pekarska str., 75, educational and production pharmacy, 2nd floor

Compilers of the syllabus:

Vashchenko O.O., PhD, assoc.prof. _____

Bilous S.B., DSci, assoc.prof. _____

Yakymiv O.V., PhD, assoc.prof. _____

Head of the Department:

Bilous S.B., DSci, assoc.prof. _____