DANYLO HALYTSKY LVIV NATIONAL MEDICAL UNIVERSITY

Department of Drug Technology and Biopharmaceutics

APPROVED
The first vice-rector on
scientific and pedagogical work,
assoc. prof. I. Solonynko
«__» _____ 2023

EDUCATIONAL PROGRAM
on discipline
«TECHNOLOGY OF MEDICINAL COSMETICS»

for training specialists of the second (master's) degree of higher education
of the specialty 226 Pharmacy, industrial pharmacy
of the specialization 226.01 Pharmacy
of the branch of study 22 Health care
for the 5th year students of Faculty of Pharmacy
of the full-time and part-time forms of education
MC 30.4

Discussed and approved
at the methodical meeting of
Department of Drug Technology and
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Minutes No.13
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Head of the department
_____ prof. S.B. Bilous

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on chemical and pharmaceutical disciplines
Minutes No.3
«_27_» __June_____ 2023
Head of the specialized methodical
commission
_____ prof. S.B. Bilous

2023

DEVELOPERS OF THE PROGRAM:

Bilous S.B. – head of the Department, DSc, professor
Kalynyuk T.H. – DSc, professor
Hrynovets I.S. – PhD, associate professor
Yezerska O.I. – PhD, associate professor
Shostak T.A. – PhD, assistant professor
Yakymiv O.V. – PhD, associate professor

REVIEWER:

Yackova H.Yu. – PhD, associate professor of the Department of Management and Economy of Pharmacy, Drug Technology and Pharmacoeconomics FPGE of Danylo Halytsky Lviv National Medical University

INTRODUCTION

Program for studying the discipline "Technology of medicinal cosmetics"
according to the Standard of higher education of the *second (master's) level*
field of knowledge *22 "Health"*
specialty *226 "Pharmacy, industrial pharmacy"*
educational program of *Master of Pharmacy*

Discipline description (abstract)

"Technology of medicinal cosmetics" belongs to the cycle of basic disciplines of professionally-oriented training of specialists in the specialty "Pharmacy, industrial pharmacy" and consists of a content module: "Technology of medicinal cosmetics".

The program of the discipline "Technology of Medicinal Cosmetics" is made in accordance with the draft Standard of Higher Education of Ukraine for the specialty "Pharmacy, Industrial Pharmacy".

The program of the discipline "Technology of Medicinal Cosmetics" provides theoretical knowledge and develops practical skills on the main stages of formation and development of pharmaceutical technology and cosmetology in Ukraine, modern directions of development of the pharmaceutical industry and professional activity in Ukraine and abroad, requirements for the manufacture of medicinal cosmetics of different pharmaceutical groups in pharmacies and industrial enterprises.

Structure of the educational discipline	Number of credits, hours, of them				Academic year / semester	Type of control
	Total	Class hours		Self-education		
		Lectures	Laboratory classes			
Pharmaceutical Biotechnology	3 credits ECTS/ 90 hours	8	30	52	5 year, IX semester	**Credit**

The subject of the discipline is the basic provisions and trends of the pharmaceutical industry in Ukraine and other countries, and in particular, the development of modern principles of regulatory documentation and technologies for the production of medicinal cosmetics, which are manufactured in various forms using active substances and excipients permitted for use in cosmetic and medical practices. As well as the use of modern types of equipment for extemporaneous and industrial production in the manufacturing process, both cosmetic and medicinal cosmetics.

Interdisciplinary links: The study of the discipline "Technology of Medicinal Cosmetics" is based on the set of interrelated disciplines such as: human anatomy and physiology, dermatology, pharmacology, drug technology, pharmacognosy, pharmaceutical chemistry and others that will allow to use a scientificall approach to the choice of medicinal cosmetics depending on their composition, purpose and mechanism of action.

According to the curriculum, the study of the discipline "Technology of Medicinal Cosmetics" is carried out in the 5th year in the X semester. The program of the discipline "Technology of Medicinal Cosmetics" consists of 3 chapters.

1. Purpose and tasks of discipline

1.1. The purpose of the discipline "Technology of medicinal cosmetics" is to acquaint students with medicinal cosmetics of different directions, the most common defects and diseases of the skin and its appendages, the principles and methods of their treatment. The knowledge acquired by students will help to provide qualified assistance in choosing rational, effective and safe cosmetics for the prevention and treatment of various defects and diseases of the skin and hair.

1.2. The main tasks of studying the discipline "Technology of medicinal cosmetics" are:

- coverage of modern requirements for medicinal cosmetics and cosmetic products, medical-biological and theoretical bases of formulations, technology and features of application of medicinal cosmetics of different directions of action, principles of complex cosmetic skin care.

• mastering and analysis of the requirements of current regulations to the organization of production activities and the sale of medicinal cosmetics and cosmetics of various forms of release;

• acquaintance with the organization of production of medicinal cosmetics in the conditions of the pharmaceutical enterprises, according to requirements of Good manufacturing practice (GMP);

• use in professional activity of normative-legal requirements of good manufacturing practice (GMP) and international legal norms concerning the manufacture of medicinal cosmetics by extemporaneous (pharmacy) and industrial methods;

• formation of students' basic knowledge related to: theoretical foundations of manufacturing and appropriate use of various types of dosage and cosmetic forms.

• understanding of the stages of step-by-step control and ways to improve the technology of dosage cosmetic forms under conditions of extemporaneous (pharmacy) and industrial production;

• study of the influence of storage conditions and type of packaging on the stability of medicinal cosmetics; • study of equipment and devices used in the manufacture of medicinal cosmetics.

1.3 Competence and learning outcomes, the formation of which contributes to discipline (interconnection with the normative content of preparation of higher education applications, formulated in terms of study results in the Standard).

According to the requirements of the Standard, discipline provides acquisition by students of competencies: **general and professional.**

General competence (GC):

GC01. Ability to abstract thinking, analysis and synthesis.
GC02. Knowledge and understanding of the subject area; understanding of professional activity.
GC03. Ability to communicate in the national language both orally and in writing.
GC04. The ability to communicate in a foreign language (mainly English) at a level that ensures effective professional activity.
GC05. The ability to evaluate and ensure the quality of the work performed.
GC06. Ability to work in a team.
GC09. Ability to use information and communication technologies

Professional competence (PC):

PC01. Ability to integrate knowledge and solve complex pharmacy/industrial pharmacy problems in broad or multidisciplinary contexts.
PC03. Ability to solve pharmacy problems in new or unfamiliar environments in the presence of incomplete or limited information, taking into account aspects of social and ethical responsibility.
PC05. Ability to demonstrate and apply communication skills and fundamental principles of pharmaceutical ethics and deontology in practical activities
PC06. The ability to develop and implement a quality management system for pharmaceutical enterprises in accordance with the requirements of current Standards, to conduct quality audits and risk management for the quality of pharmaceutical products.
PC07. The ability to carry out sanitary and educational work among the population for the purpose of prevention and prevention of common, dangerous infectious, viral and parasitic diseases, promotion of timely detection and support of adherence to the treatment of these diseases according to their medico-biological characteristics and microbiological features.
PC08. The ability to provide rational use and counseling regarding prescription and non-prescription drugs and other products of the pharmacy assortment, pharmaceutical care during the selection and sale of drugs by assessing the risk/benefit ratio, compatibility, taking into account their biopharmaceutical, pharmacokinetic, pharmacodynamic, and physicochemical properties and chemical features, indications/contraindications for use, guided by data on the health status of a particular patient.

PC12. The ability to ensure the proper storage of medicines and other products of the pharmacy assortment in accordance with their physical and chemical properties and the rules of Good Storage Practices in health care institutions.
PC16. The ability to organize and carry out the production activities of pharmacies for the manufacture of medicinal products in various dosage forms according to the prescriptions of doctors and the requirements (orders) of medical and preventive institutions, including the justification of technology and the selection of auxiliary materials in accordance with the rules of Good Pharmacy Practice.
PC17. The ability to carry out pharmaceutical development, determine the stability of medicinal products and participate in the production of medicinal products in the conditions of pharmaceutical enterprises in accordance with the requirements of Good Manufacturing Practice with the appropriate development and preparation of the necessary documentation.
PC19. The ability to organize and carry out quality control of medicinal products in accordance with the requirements of the current edition of the State Pharmacopoeia of Ukraine, quality control methods, technological instructions, etc.; carry out standardization of medicinal products in accordance with current requirements; to prevent the distribution of low-quality, falsified and unregistered medicinal products.
PC20. The ability to develop and evaluate methods of quality control of medicinal products, including active pharmaceutical ingredients, medicinal plant raw materials and auxiliary substances using physical, chemical, physico-chemical, biological, microbiological and pharmaco-technological control methods.

Program learning outcomes (PLO), the formation of which is facilitated by the educational discipline:
PLO01. Possess specialized conceptual knowledge in the field of pharmacy and related fields, taking into account modern scientific achievements, and be able to apply them in professional activities.
PLO03. Possess specialized knowledge and abilities/skills for solving professional problems and tasks, including for the purpose of improving knowledge and procedures in the field of pharmacy.
PLO04. Communicate freely in the national and English languages orally and in writing to discuss professional problems and results of activities, presentation of scientific research and innovative projects.
PLO05. Assess and ensure the quality and efficiency of activities in the field of pharmacy in standard and non-standard situations; adhere to the principles of deontology and ethics in professional activity.
PLO06. Develop and make effective decisions to solve complex/complex problems of pharmacy personally and based on the results of joint discussion; formulate the goals of one's own activity and the activity of the team, taking into account social and industrial ones
interests, general strategy and existing limitations, determine optimal ways to achieve goals.
PLO07. Analyze the necessary information on the development and production of medicinal products, using professional literature, patents, databases and other sources; systematize, analyze and evaluate it, in particular, using statistical analysis.
PLO08. Develop and implement innovative projects in the field of pharmacy, as well as related interdisciplinary projects taking into account technical, social, economic, ethical, legal and environmental aspects.
PLO09. Formulate, argue, clearly and concretely convey to specialists and non-specialists, including those seeking higher education, information based on one's own knowledge and professional experience, the main trends in the development of world pharmacy and related industries.
PLO13. Record cases of side effects when using medicinal products of natural and synthetic origin; evaluate factors that can affect the processes of absorption, distribution, deposition, metabolism and excretion of drugs and are determined by the condition and characteristics of the human body and the pharmaceutical characteristics of drugs.
PLO15. Predict and determine the influence of environmental factors on the quality and consumer characteristics of medicines and other products of the pharmacy assortment, organize their storage in accordance with their physical and chemical properties and the rules of Good Storage Practices.
PLO19. Develop technological documentation for the manufacture of medicinal products, choose a rational technology, manufacture medicinal products in various dosage forms according to the prescriptions of doctors and the requirements (orders) of treatment and prevention institutions, prepare them for release.
PLO20. Carry out pharmaceutical development of medicinal products of natural and synthetic origin in the conditions of industrial production.

PLO23. Determine the main chemical and pharmaceutical characteristics of medicinal products; choose and/or develop quality control methods for the purpose of their standardization using physical, chemical, physicochemical, biological, microbiological and pharmacotechnological methods in accordance with current requirements.
PLO26. Plan and implement professional activities on the basis of normative legal acts of Ukraine and recommendations of proper pharmaceutical practices.
PLO27. To contribute to the preservation of health, in particular the prevention of diseases, the rational prescription and use of medicinal products.

2. Information scope of discipline

For study of discipline is given 3 ECTS credits - 90 hours.

3. Structure of discipline

Content module 1. Technology of medicinal cosmetics

Content module 1. Technology of medicinal cosmetics consist of 3 chapters:

Chapter 1. General issues of production and sale of cosmetics. Structure and types of skin. Safety of cosmetic products

Chapter 2. Technology of medicinal cosmetics of various dosage forms

Chapter 3. Technology of foaming, deodorizing cosmetics and cosmetics for oral care.

Topic	Lectu-res	Labora-tory classes	Self-educa-tional work	Indivi-dual work
Chapter 1 **General issues of production and sale of cosmetics. Structure and types of skin. Safety of cosmetic products**				
Topic 1. Cosmetics, their classification and characteristics. Standardization of production and criteria for quality and safety of cosmetic products	2	3	11	-
Topic 2. Skin, its structure and functions. Anatomical-physiological and clinical characteristics of the skin and determination of skin types, skin aging. Features of nail and hair care. The most common diseases of the skin and its appendages	2	3	10	-
Topic 3. Ingredients of cosmetics, their classification and characteristics. Safety of certain groups of ingredients. Principles of selection of antimicrobial preservatives and surfactants for cosmetics	-	3	13	-
Chapter 2 **Technology of medicinal cosmetics of various dosage forms**				
Topic 4. Solid medicinal cosmetics. Species. Powders. Technology, quality control and application	-	3		-
Topic 5. Liquid medicinal cosmetics. Lotions and tonics. Technology, quality control and application. Cosmetics for hair care. Shampoos. Balms. Rinsers. Technology, quality control and application	2	3		-
Topic 6. Semi-solid cosmetics. Emulsion-based cosmetics. Technology, quality control and application	-	3	3	-
Topic 7. Oilly cosmetic creams. Oil-free creams, cosmetics based on gels. Technology, quality control and application	-	3		-
Topic 8. Suspension cosmetics. Creams-scrubs. Masks. Technology, quality control and application	-	3		-
Chapter 3 **Technology of foaming, deodorizing cosmetics and cosmetics for oral care**				
Topic 9. Foaming cosmetics. Soaps. Shower gels. Deodorants and antiperspirants. Technology, quality control and application	-	3	8	-

Topic 10. Cosmetics for oral cavity care. Tooth powders, toothpaste and liquid products for oral cavity hygiene. Technology, quality control and application	2	3	7	-
Total hours of discipline - 90/3 Credits ESTS	**8**	**30**	**52**	
Final control				**Залік**

4. Thematic plan of lectures

No	Topic	Number of hours
	Chapter 1 **General issues of production and sale of cosmetics. Structure and types of skin. Safety of cosmetic products**	
1	Cosmetic products, standardization of their production and safety of use. Skin and its appendages, anatomical and physiological features, cosmetic defects and skin diseases	2
	Chapter 2 **Technology of medicinal cosmetics of various dosage forms**	
2	Ingredients of cosmetics, principles of cosmetic products compounding. Technology of solid medicinal cosmetics	2
3	Technology of liquid and semi-solid medicinal cosmetics	2
	Chapter 3 **Technology of foaming, deodorizing cosmetics and cosmetics for oral care**	
4	Technology of cosmetics for oral cavity care and deodorizing cosmetics. Modern technologies in the production of medicinal cosmetics	2
	Total	**8**

5. Thematic plan of laboratory classes

No	Topic	Number of hours
	Chapter 1 **General issues of production and sale of cosmetics. Structure and types of skin. Safety of cosmetic products**	
1	Cosmetics, their classification and characteristics. Standardization of production, criteria of quality and safety of cosmetic products	3
2	Skin, its structure and functions. Skin types, features of care, skin aging, the most common diseases of the skin and its appendages	3
3	Ingredients of cosmetics, their classification, characteristics and safety of use. Antimicrobial preservatives and surfactants in cosmetics	3
	Chapter 2 **Technology of medicinal cosmetics of various dosage forms**	
4	Solid medicinal cosmetics, technology, quality control and application	3
5	Liquid medicinal cosmetics, technology, quality control and application	3
6	Semi-solid cosmetics based on emulsions, technology, quality control and application	3
7	Oilly and oil-free creams, technology, quality control and application	3
8	Suspension cosmetics, technology, quality control and application	3
	Chapter 3 **Technology of foaming, deodorizing cosmetics and cosmetics for oral care**	

9	Foaming cosmetics, deodorants and antiperspirants, technology, quality control and application	3
10	Cosmetics for oral cavity care, technology, quality control and application	3
	Total	**30**

6. Thematic plan of self-educational work

No	Topic	Number of hours	Type of control
	Chapter 1 **General issues of production and sale of cosmetics. Structure and types of skin. Safety of cosmetic products**		
1	The definitions of main terms: "cosmetics", "cosmetology", "cosmeceutics", "cosmetics product", "medicinal cosmetics"	4	Поточний контроль на практичних заняттях
2	Standardization of production, registration and certification of cosmetics and medicinal cosmetics	4	
3	The main regulatory documents on the creation, production and realize of cosmetics and medicinal cosmetics	3	
4	The most common diseases of the skin and its appendages - etiology, pathogenesis and clinical signs of main diseases	4	
5	Structure and types of hair, principles of hair care	3	
6	General principles of pharmaceutical care of patients with cosmetic problems	3	
7	The role of skin care in the prevention of skin diseases and its appendages	4	
	Chapter 2 **Technology of medicinal cosmetics of various dosage forms**		
8	Cosmetic products for protecting the skin from adverse factors (wind, frost, ultraviolet, moisture), features of their composition and application.	3	Поточний контроль на практичних заняттях
9	The use of medicinal plant raw materials in the technology of medicinal cosmetics	3	
10	Components of animal origin in the composition of medicinal cosmetics	3	
11	The principle of selection of excipients for the preparation of medicinal cosmetics in the form of various dispersed systems	4	
	Chapter 3 **Technology of foaming, deodorizing cosmetics and cosmetics for oral care**		
12	Principles of cosmetic procedures - skin cleansing, massage, application of mask, peeling, depilation, etc.	4	Поточний контроль на практичних заняттях
13	Psychological aspects of cosmetology. Cosmetics and the concept of beauty	3	
14	The price situation of cosmetics. Advertising of cosmetics	3	
15	The concept of aromology. The use of essential oils in cosmetology	4	
	Total	**52**	

7. Individual tasks

Not provided by the curriculum.

8. Teaching methods

At teaching the discipline, different teaching methods are used: verbal, visual and practical methods.

Types of educational activities of students according to the curriculum are:

a) lectures;

b) laboratory classes;

c) self-educational work of students.

The lecture course includes the teaching of the most important topics based on the achievements of domestic and foreign science in the field of cosmetology, dermatology and technology of cosmetics. The task of the lecture course on the discipline is to highlight the modern requirements to cosmetics, medical, biological

and theoretical foundations of formulations, technology and features of the use of medicinal cosmetics of different action, the principles of comprehensive cosmetic skin care.

Laboratory classes involve teaching of students to prepare medicinal cosmetics of various dosage forms and assess their quality in accordance with the requirements of regulatory documentation. Laboratory classes also include elements of educational and research work and test control, solving educational and situational tasks. In the process of conducting of laboratory tasks, students must follow the rules of safety, instruction in which is conducted on the first laboratory lesson and supervised by teachers in each lesson.

In laboratory classes, students write protocols, which indicate the purpose of the class, record all work performed in accordance with the tasks provided by the methodical recommendations, and provide conclusions.

Self-educational work covers the necessary for the student sections of the program, which are studied in the educational process in physiology, drug technology, pharmacognosy, medical chemistry, etc. and regulations governing the composition, quality and safety of medicinal cosmetics.

9. Control methods. Control methods include current and final semester control.

10. The current control is carried out during the training sessions and aims to verify the assimilation of educational material by students.

Current control: oral examination, test control, control of practical skills, acceptance of protocols of practical work. Current control is carried out at each laboratory class in accordance with specific objectives.

The form of assessment of current educational activities is standardized and includes control of theoretical and practical training.

The control of theoretical training is carried out by performing test tasks, situational tasks, and practical skills by assessing the quality and completeness of practical tasks and the ability to interpret the results.

At each laboratory class, the student answers test tasks on the topic of the laboratory lesson, standardized questions, knowledge of which is necessary to understand the current topic; demonstrates knowledge, skills and practical abilities in accordance with the topic of the laboratory class. The grade for the laboratory class is determined by the sum of the results of test control and performance of practical tasks. Students' self-educational work is assessed during the current control of the topic in the relevant class. A student who has missed classes is allowed to work off academic debt by the deadline.

11. Final control is carried out in order to assess learning outcomes at a certain educational and qualification level and at some of its completed stages in a national scale and ECTS scale. The form of final control on technology of medicinal cosmetics in accordance with the curriculum is a credit.

Credit is a form of final control, which consists in assessing the student's mastery of educational material in the discipline for the semester solely on the basis of the results of current control.

12. Scheme of accrual and distribution of points received by students

During the assessment of mastering each topic for the current educational activity of the student, grades are set on a 4-point (traditional) scale, taking into account the approved criteria. The student must receive a grade on each topic.

The results of the current control are an indicator of the level of students' mastery of the educational program and the performance of self-educational work.

The maximum number of points that a student can score for the current academic activity is 200 points.

The minimum number of points that a student must score for the current educational activity is 120.

The calculation of the number of points is based on the grades obtained by the student in the traditional scale during the study of the discipline by calculating the arithmetic mean (CA), rounded to two decimal places. The value obtained is converted into points as follows:

$$X = \frac{CA \times 200}{5}$$

The calculation of the average grade for current activities into a multi-point scale for the discipline, ending with a credit, is given in the table.

Table

Calculation of the average score for current activities in a multi-point scale

4-points scale	200-points scale		4-points scale	200-points scale		4-points scale	200-points scale		4-points scale	200-points scale
5	200		4.45	178		3.92	157		3.37	135
4.97	199		4.42	177		3.89	156		3.35	134
4.95	198		4.4	176		3.87	155		3.32	133
4.92	197		4.37	175		3.84	154		3.3	132
4.9	196		4.35	174		3.82	153		3.27	131
4.87	195		4.32	173		3.79	152		3.25	130
4.85	194		4.3	172		3.77	151		3.22	129
4.82	193		4.27	171		3.74	150		3.2	128
4.8	192		4.24	170		3.72	149		3.17	127
4.77	191		4.22	169		3.7	148		3.15	126
4.75	190		4.19	168		3.67	147		3.12	125
4.72	189		4.17	167		3.65	146		3.1	124
4.7	188		4.14	166		3.62	145		3.07	123
4.67	187		4.12	165		3.57	143		3.02	121
4.65	186		4.09	164		3.55	142		3	120
4.62	185		4.07	163		3.52	141		Less than 3	Not enough
4.6	184		4.04	162		3.5	140			
4.57	183		4.02	161		3.47	139			
4.52	181		3.99	160		3.45	138			
4.5	180		3.97	159		3.42	137			
4.47	179		3.94	158		3.4	136			

Points from the discipline are independently converted into both the ECTS scale and the 4-point scale. ECTS scale scores are not converted to a 4-point scale and vice versa.

The points of students studying in one specialty, taking into account the number of points scored of the discipline are ranked on the ECTS scale as follows:

Point by ECTS	Statistical index
A	**The best 10% of students**
B	**The following 25% of students**
C	**The following 30% of students**
D	**The following 25% of students**
E	**The last 10% of students**

Points from the discipline for students who have successfully completed the program are converted into a traditional 4-point scale according to the absolute criteria listed in the table below.

Points from the discipline	Score on a 4-point scale
From 170 to 200 points	5
From 140 to 169 points	4
From 139 points to the minimum number of points that a student must score	3
Below the minimum number of points that a student must score	2

The ECTS score is not converted to the traditional scale, as the ECTS scale and the 4-point scale are independent.

The objectivity of the assessment of students' learning activities is checked by statistical methods (correlation coefficient between ECTS assessment and assessment in a national scale).

13. Methodical support:

- Lecture material (multimedia presentations, lecture texts, calendar-thematic plan of lectures).
- Calendar-thematic plans of laboratory classes.
- Questions for laboratory classes and self-educational work.
- Methodical recommendations for laboratory classes.
- Videos.
- Internet resources.

14. REFERENCES

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