

**MEDICAL UNIVERSITY – PLOVDIV**  
**FACULTY OF PHARMACY**

# **SYLLABUS**

**in**

**TECHNOLOGY OF**  
**MEDICAL COSMETICS**

**Approved by the Department Council - Protocol № 10/18.10.2024**

**Confirmed by the Faculty Council - Protocol № 09/13.11.2024**

# TECHNOLOGY OF MEDICAL COSMETICS

## Syllabus

Discipline	Final exam/ semester	According to the Faculty of Pharmacy curriculum of MU-Plovdiv Academic hours				ECTS	Academic hours in semester	
		Auditorium	Lectures	Practices	Non-auditorium		VIII semester	
							L	P
Technology of medical cosmetics	VIII	20	8	12	30	2	8	12

**DISCIPLINE:**

Technology of medical cosmetics

**TYPE OF DISCIPLINE ACCORDING TO THE UNIFORM STATE REQUIREMENTS:**

Optional

**LEVEL OF QUALIFICATION:**

MPharm

**FORMS OF TRAINING:**

Lectures, practicals

**YEAR OF TRAINING:**

IV course

**DURATION OF TRAINING:**

One semester

**ACADEMIC HOURS:**

8 hours lectures, 12 hours practice

**TECHNICAL EQUIPMENT APPLIED IN THE TRAINING:**

Multimedia presentations, discussions, preparation of papers, practical exercises

**FORMS OF EVALUATION:**

Current assessment, individual problem-solving.

**EVALUATION CRITERIA:**

Mean of current ratings for the semester.

**ASPECTS OF EVALUATION CRITERIA:**

Participation in discussions, examination rates, preparation of a paper.

**SEMESTER EXAM:**

Yes /in practice – written form and preparation of a cosmetic formulation; in theory – written and oral form/.

**STATE EXAM:**

No

**LECTURER:**

Professor from the department of Pharmaceutical sciences.

**DEPARTMENT:**

Pharmaceutical sciences

**ANNOTATION**

Technology of medical cosmetics is an elective discipline for Pharmacy students from 4<sup>th</sup> course.

The aim of the course is to introduce students to the essence of modern cosmetics, the areas and perspectives of its development, the basic terms and definitions, the specific materials for the medical cosmetic preparations, prescriptions, laboratory techniques, their application and realization.

The acquired knowledge can be used for:

- Preparation of cosmetic products according to medical prescriptions for individual cosmetic care and treatment of specific cosmetic problems of the patients;
- Professional evaluation of commercial cosmetic products and competent consultation of patients for their choice and use of cosmetics;
- Competent participation in creating and editing corporate leaflets, brochures and flyers.

**BASIC AIMS OF THE DISCIPLINE**

The program of the lectures is divided into two sections: a general and a specialized section.

The general section includes:

- Subject and tasks of cosmetology, basic definitions;
- Main organs that are subject to and concern cosmetology – skin, hair, nails, eyes, oral cavity;
- Classification of cosmetic products;
- Technological components – auxiliaries and carriers used in cosmetics;
- Active substances which are used in cosmetics;
- Substances with aesthetic purpose – perfumes, dyes;
- Basic technological operations in the preparation of cosmetic products;

- Packaging and control;
- Quality of cosmetic products – efficiency, safety, stability;
- Contemporary technological approaches to increase cosmetic product efficiency.

The specialized section includes the most widely used cosmetic products classified by application site (skin, hair, nails, oral cavity) and the purpose of their application (cleaning, maintenance, hydrating, etc.).

Each group of preparations is divided into subgroups according to their aggregate state and the type of dispersion system in accordance with Eur. Ph.

### **EXPECTED RESULTS**

After completing the course students must have acquired the following knowledge and skills:

- Anatomical and physiological characteristics of the application site and pathological changes leading to cosmetic defects;
- Definition, characteristics, basic composition – additives and active substances;
- Technology;
- Packaging, control, storage;
- Application methods.

The discipline course is completed with practical and theoretical examination.

**PROGRAM FOR LECTURES**  
**IV course, VIII semester**

№	TOPIC	HOURS	DATE
1	Cosmetics – subject and tasks. Cosmetic products – classification. Regulatory documents for cosmetic products. Requirements of European and Bulgarian legislation.	2 h.	
2	Raw materials for cosmetic products. Basic technological operations applied in the preparation of CP. Stability and stabilization of cosmetic products.	2 h.	
3	Contemporary technological approaches to improve the effectiveness of cosmetic products. Hair cosmetics.	2 h.	
4	Oral products – toothpastes, tooth powders, mouthwashes. Skin cosmetics. Decorative cosmetics. Essence, meaning, products.	2 h.	

**TOTAL: 8 h.**

**PROGRAM FOR PRACTICAL EXERCISES**  
**IV course, VIII semester**

№	TOPIC	HOURS	DATE
1	Liquid formulations for dermal application. Classification, characterization, control, storage. Lotions, tonics, micellar water. Cleansing milk – emulsions of W/O and O/W type.	3 h.	
2	Semi-solid formulations for dermal application. Characteristics, classification, requirements according to Eur. Ph. Carriers, preparation and control. Cosmetic creams – emulsions of type O/W and W/O. Cosmetic face masks. Nourishing therapy for dry hands and nails. Lip balm.	3 h.	
3	Cosmetic gels. Anti-cellulite body gel, body scrub.	3 h.	
4	Emulgels. Characteristics, preparation and control. Anti-age emulgel with Apogen.	3 h.	

**TOTAL: 12 h.**

## LECTURES – THESES

### *LECTURE № 1 – 2 hours*

#### **COSMETICS – SUBJECT AND TASKS. COSMETIC PRODUCTS – CLASSIFICATIONS. REGULATORY REQUIREMENTS.**

Definition. Classification – medical and decorative cosmetics. Historical data on the development of cosmetics. Definition of a cosmetic product. Discussing the Bulgarian regulatory documents concerning cosmetics. Cosmetic products categories. Classification of cosmetics according to application site. Skin structure. Factors that affect the basic skin functions. List of cosmetic products categories. Classification according to the type of dispersion system. Cosmetic products for different skin types.

### *LECTURE № 2 – 2 hour*

#### **RAW MATERIALS FOR COSMETIC PRODUCTS. MAIN TECHNOLOGICAL OPERATIONS USED IN THE PREPARATION OF COSMETIC PRODUCTS. STABILITY AND STABILIZATION OF COSMETIC PRODUCTS.**

Selection of components for cosmetic products – based on the requirements of safety, compatibility and synergy, optimal concentration to achieve an effect without aggravating the composition. Quality of cosmetic raw materials and price of cosmetic products. Components for cosmetic purposes. Components for technological purposes. Components for aesthetic purposes. Hydrophobic raw materials – fats, vegetable oils, hydrocarbons, silicone oils, etc. Hydrophilic components, surfactants, etc.

Influence of the technological regime on the quality of the cosmetic product. Requirements for manufacturers and persons who place a cosmetic product on the market. Control of cosmetic raw materials and finished products. Risks of microbial contamination and precautions. Excipients for regulating the physicochemical properties of dispersed systems. Improving and adjusting viscosity. Ensuring stability during storage and use.

### *LECTURE № 3 – 2 hours*

#### **CONTEMPORARY TECHNOLOGICAL APPROACHES TO IMPROVE THE EFFICIENCY OF COSMETIC PRODUCTS. HAIR COSMETIC PRODUCTS.**

Effectiveness and tolerability of cosmetic products. Influencing the permeability of Stratum corneum by moisturizing substances, solvents, surfactants, physical methods. Use of nanocarriers of medicinal substances: liposomes, lipid nanocarriers, nanoemulsions, etc. Hair products – purpose. Cleaning, washing, maintenance. Specific problems – dandruff, hair loss. Hair maintenance. Decorative changes – coloring, perming. Detergents – requirements. Classification. Composition of shampoos. Cosmetic masks.

### *LECTURE № 4 – 2 hours*

#### **ORAL PRODUCTS – TOOTHPASTE, TOOTH POWDER, MOUTHWATER. SKIN COSMETIC PRODUCTS. DECORATIVE COSMETICS. ESSENCE, MEANING, PRODUCTS.**

Purpose of products for the oral cavity. Principled composition. Skin masks – types of systems and purpose. Cosmetic creams. General characteristics, definition. Anhydrous oil creams. Skin maintenance day and night. Decorative cosmetics – types of products.

## PRACTICAL EXERCISES – THESES

### *EXERCISE № 1 – 3 hours*

**LIQUID FORMULATIONS FOR DERMAL APPLICATION. CLASSIFICATION, CHARACTERIZATION, CONTROL, STORAGE. LOTIONS, TONICS, MICELLAR WATER. CLEANSING MILK – EMULSIONS OF W/O AND O/W TYPE.**

Discussion and preparation of lotions for oily and dry skin, lotions for acne, lotions for allergic skin, cleansing lotions for oily and dry skin. Discussion of prescriptions and formulation of different types of lotions and micellar water.

Discussion and preparation of cleansing milk – different types of dispersion systems. Product requirements and formulation – liquid emulsions of type O/W and W/O.

### *EXERCISE № 2 – 3 hours*

**SEMI-SOLID FORMULATIONS FOR DERMAL APPLICATION. CHARACTERISTICS, CLASSIFICATION, REQUIREMENTS ACCORDING TO EUR. PH. CARRIERS, PREPARATION AND CONTROL. COSMETIC CREAMS – EMULSIONS OF TYPE O/W AND W/O. COSMETIC FACE MASKS. NOURISHING THERAPY FOR DRY HANDS AND NAILS. LIP BALM.**

Basic composition of a Cold cream – discussion of components, possible technology and formulation.

Possible formulations of a hydrophilic O/W cream. Discussion and formulation of such a cream. Hydrophobic W/O cream – discussion and formulation.

Cream mask for normal skin. Basic composition and formulation. A clay-based mask and a toning mask. An astringent mask – discussion of composition and formulation.

Nourishing therapy for dry hands and nails. Discussion and preparation of composition. Lip balm – discussion of composition and preparation.

### *EXERCISE № 3 – 3 hours*

**COSMETIC GELS. ANTI-CELLULITE BODY GEL. BODY SCRUB.**

An anti-cellulite body gel – basic composition. Discussion of the composition and preparation. Body scrub – basic composition and preparation.

### *EXERCISE № 4 – 3 hour*

**EMULGELS. CHARACTERISTICS, PREPARATION AND CONTROL. ANTI-AGE EMULGEL WITH APOGEN.**

Characteristics, preparation and control. Anti-age emulgel with Apogen – discussion of composition, technology and preparation.

## BIBLIOGRAPHY

1. Ernest W. Flick – *Cosmetic and toiletry formulations*, Noyes Publications / William Andrew Publishing, LLC, New York, 2001
2. Zoe Diana Draelos, Lauren A. Thaman – *Cosmetic formulation of skin care products*, Taylor & Francis Group, New York, 2006
3. Andre' O. Barel, Marc Paye, Howard I. Maibach – *Handbook of cosmetic science and technology* 3rd ed., Informa Healthcare USA, Inc. 2009
4. Gabriella Baki, Kenneth S. Alexander – *Introduction to cosmetic formulation and technology*, John Wiley & Sons, Inc., New Jersey, 2015

## TOPICS FOR WRITTEN PAPERS

1. Hydrophobic bases for the preparation of cosmetic and medicinal creams. Which are the main principles depending on the type of cosmetic product? How to choose the cosmetic product depending on the type of skin?
2. Surfactants used in shampoos – requirements, technological purpose and selection depending on the type of hair (oily, dry, normal).
3. Contemporary technological approaches to increase the efficiency of cosmetic products. Use of microcarriers for medicinal and other substances.
4. Choice of cosmetic products – approaches based on age. Materials, which are used for baby cosmetics and materials for aging skin.

## **SYLLABUS**

### **Technology of medical cosmetics**

- 1.** Classification of medical cosmetic preparations.
- 2.** Structure and function of the skin. Skin types. Factors, which affect the main skin functions.
- 3.** Ensuring the quality of the cosmetic products. Requirements of the European and Bulgarian legislation.
- 4.** Materials which are used for cosmetic products – components with technological purpose, components with cosmetological purpose, components with aesthetic purpose.
- 5.** Hydrophobic and hydrophilic materials. Representatives. Principles for their selection according to the type of cosmetic product and the type of skin.
- 6.** Surfactants. Gelling and viscosity-enhancing substances.
- 7.** Creams bases. Gel bases. Preservatives and antioxidants for cosmetic products.
- 8.** Biologically active substances – vitamins, moisturizing substances, plant extracts. Photoprotectors – evaluation the degree of photo protection.
- 9.** Vitamins in cosmetic products.
- 10.** Control of cosmetic materials and cosmetic products.
- 11.** Contemporary technological approaches to increase the effectiveness of cosmetic products. Liposomes, lipid structures, nanoemulsions, dermal membrane structures.
- 12.** Baby cosmetics. Choosing cosmetic materials to ensure the quality of baby products.
- 13.** Cosmetic products for aging skin.
- 14.** Cosmetic creams. Preparation of day creams and night creams.
- 15.** Cosmetic products for facial skin cleansing. Thermal water, lotions, cleansing milk. Cosmetic face masks.
- 16.** Hair products – shampoos, conditioners.
- 17.** Oral products – toothpastes, toothpowders, mouthwashes.
- 18.** Medical cosmetic soaps.
- 19.** Decorative cosmetics. Characteristics, formulations.