

Course title: BASICS OF BIOCHEMISTRY IN COSMETOLOGY

ECTS credit allocation (and other scores): 2

Semester: winter

Level of study: ISCED-6 - first-cycle programmes (EQF-6) / ISCED-7 - second-cycle programmes (EQF-7)

Branch of science: Natural sciences

Language: English

Number of hours per semester: 30

Course coordinator/ Department and e-mail: Edyta Sienkiewicz-Szłapka / Biochemistry,
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Type of classes: classes and lectures

Substantive content

CLASSES: Exercises in the laboratory. Individual work of the student - carrying out analyses and writing reports with results in the following areas: Preparation and qualitative evaluation of lecithin from egg yolk and production of liposomes; Isolation and determination of the activity of bromelain from pineapple (enzyme peeling); Isolation and separation of essential oils from plant materials; Production of cosmetic emulsions (creams) enriched with biologically active compounds.

LECTURES: The history of cosmetics. Definition and classification of cosmetic products. Formal and legal issues related to cosmetics (legal regulations, notification and documentation of cosmetics, labelling of cosmetics). Introduction of cosmetics to the market and assessment of their safety. Testing the efficacy of cosmetics. Adverse reactions to cosmetics. Structure and functions of the skin. Skin ageing and factors that accelerate this process. Penetration of active ingredients through the skin barrier. The carrier systems used in modern cosmetics and nanocosmetics. The INCI nomenclature of ingredients. The basic components of cosmetics. Biologically active compounds used in cosmetics and professional beauty treatments and their mechanisms of action: natural and synthetic antioxidants, vitamins, amino acids, peptides, proteins, enzymes, hormones, fatty acid derivatives, nucleotides, trace elements. Nutricosmetics and nutrigenomics.

LEARNING PURPOSE: The course is a source of the latest knowledge on natural and chemically or biotechnologically obtained active substances with dermoprotective activity. The aim is to deepen the students' knowledge by sensitising them to the aspects of practical issues related to people's health and quality of life when using cosmetics (also in the context of the cosmetics manufacturer's responsibility).

On completion of the study programme the graduate will gain:

KNOWLEDGE: An overview of the formal and legal issues related to the cosmetics industry; terminology used in cosmetology; adverse reactions to cosmetics; the ageing process at the cellular and skin level; the basic composition of the cosmetic product and with examples of compounds with biological activity; principles of basic biochemical techniques and the operation of laboratory equipment used to analyse the ingredients of cosmetics.

SKILLS: Selecting ingredients for the preparation of a cosmetic product with a specific effect; evaluating the potential effectiveness of the product for a specific dermatological problem, performing a simple analysis of the cosmetic ingredients or raw materials used in its preparation, interpreting the results of the experiments, collecting and processing scientific information, working as part of a team.

SOCIAL COMPETENCIES: creating an awareness of the need to constantly update one's knowledge and improve professional skills, developing the habit of complying with health and safety rules in the laboratory, taking responsibility for one's own safety, and the safety of the environment.

Literature: 1) Zoe Diana Draelos (Ed.), *Cosmetic Dermatology: Products and Procedures*, Wyd. Wiley-Blackwell, R. 2022, s. 640 2) Michniak-Kohn B.B. (Ed.), *Harry's Cosmeticology. The Skin: Structure, Biochemistry, Function and Testing for Cosmetic Formulators*, Wyd. Chemical Publishing, R. 2016, s. 336 3) Patricia K. Farris, *Cosmeceuticals and Cosmetic Practice*, Wyd. John Wiley Sons, R. 2014, s. 312 4) Raja K. Sivamani, Jared R. Jagdeo, Peter Elsner, Howard I. Maibach, *Cosmeceuticals and Active Cosmetics*, Wyd. Taylor Francis, R. 2015, s.472 5) Rogiers V., Pauwels M. *Current Problems in Dermatology 36. Safety Assessment of Cosmetics in Europe*, Wyd. Karger Verlag, R. 2008, s. 214 6) Draelos, Zoe Diana, ed. Dover, Jeffrey S., Murad Alam, *Cosmeceuticals (Procedures in Cosmetic Dermatology Series)*, Wyd. Elsevier LTD, Oxford, R. 2015, s. 226

The allocated number of ECTS points consists of: 2

Contact hours with an academic teacher: 12.00-14.00 Monday