

Course title Chemia kosmetyków / Cosmetics chemistry		ECTS code 13.3.0488	
Name of unit administrating study Faculty of Chemistry			
Studies			
Field of study	Type	Form	
Chemistry	Bachelor	Full-time studies	
Teaching staff Dr hab. Beata Grobelna, prof. UG			
Forms of classes, the realization and number of hours		ECTS credits 4	
A. Forms of classes, in accordance with the UG Rector's regulations lecture, laboratory classes		classes - 60 h tutorial classes – 5 h student's own work – 35 h	
B. The realization of activities in-class learning		Total: 100 h - 4 ECTS	
C. Number of hours 60 h (30 h lecture, 30 h laboratory classes)			
The academic cycle 2020/21 summer semester			
Type of course obligatory		Language of instruction Polish	
Teaching methods Lecture with multimedia presentation Experimental works		Form and method of assessment and basic criteria for evaluation or examination requirements	
		A. Final evaluation, in accordance with the UG study regulations course completion (with a grade)	
		B. Assessment methods determination of the final grade based on partial grades received during the semester written test with open questions	
		C. The basic criteria for evaluation or exam requirements The scale of grades in accordance with the applicable UG Regulations • positive evaluation of the written exam consisting of 10-15 open questions covering the issues mentioned in the lecture content and laboratory exercises, • positive assessment of 6 entrance collections covering the subject of performed experiments as part of laboratory exercises, preparation of the experimental part included in the curriculum and elaboration of results obtained in the experimental part (report).	
Required courses and introductory requirements completed general and inorganic chemistry course. identifies and recognizes basic organic and inorganic compounds, applies basic formulas from stoichiometry and concentrations of solutions for chemical calculations, performs simple chemical experiments.			
Aims of education <ul style="list-style-type: none"> • development the ability to independently perform cosmetic products and to solve problems during the production of cosmetics. • familiarize students with terminology and cosmetic nomenclature.. • familiarize students with the properties of raw materials for the production of cosmetics. • development the ability to use chemical knowledge in assessing the production possibilities of selected cosmetics on an industrial scale and the selection of optimal raw materials to obtain a specific product.. 			

Course contents

A. Lecture topics: structure and properties of emulsion, stages of emulsion formation, stability and instability of the emulsion system. Natural and synthetic emulsifiers, selection and operation of the emulsifier, HLB of emulsifier. Cosmetic emulsions: characteristic of raw materials of emulsion, INCI nomenclature, formulation of emulsion. Active ingredients in cosmetics: vitamins, liposomes, proteins, peptides, lipids, ceramides, substances of vegetable origin. UV filters (physical and chemical). Antimicrobial compounds (preservatives, deodorants, antiperspirants). Antioxidants: characterization of compounds, antioxidant effect in a cosmetic product. Fragrance compounds: natural and synthetic, isolation, formulation. Surfactants (soaps, detergents, shampoos), their characteristics and biodegradation. Chemistry of colored cosmetics: (hair dyes, roses, powders, inks, lipsticks) characteristics of basic raw materials and production stages. Means for oral hygiene (toothpastes, mouth rinses, powders and bleaches). The classification of all cosmetic components discussed is based on functional groups or chemical systems present in the connection structure..

B. Laboratory exercises topics: students will use the knowledge gained during the lecture to learn practical skills related to the preparation and technology of manufacturing selected cosmetics.

Bibliography of literature

A. Literature required to pass the course

1. „Zarys Chemii Kosmetycznej” Wiesław Malinka
2. „Zarys Chemii i Technologii Kosmetyków” Janina Marcinkiewicz-Salmonowiczowa
3. „Chemia piękna” Marcin Molski
4. „Technologia kosmetyków” Władysław Brud, Ryszard Glinka
5. „Receptura kosmetyczna” Ryszard Glinka

B. Extracurricular readings

- „Kosmetologia i farmakologia skóry” M.C.Martini,
 „Encyklopedia kosmetyki” Jacek Arct.

Knowledge

1. identifies and recognizes basic cosmetics,
2. defines emulsion systems,
3. demonstrates knowledge of the selection of the right ingredients for cosmetic products
4. uses the INCI (International Nomenclature Chemical Ingredients) terminology,
5. locates active ingredients in cosmetic products,
6. distinguishes basic types of UV filters,
7. explains the effect of preservatives,
8. characterizes compounds with antioxidant activity,
9. lists compounds with aromatic properties
10. classifies the ingredients of cosmetic products to particular groups of chemical compounds
11. classifies compounds with harmful effects on the human body,
12. recognizes and compares the most important properties of ingredients in cosmetic products,.

Skills

1. independently performs cosmetic emulsions,
2. independently searches for information in the cosmetics literature,
3. uses basic formulas of stoichiometry and concentration of solutions to calculate the right amounts of raw materials for the production of cosmetics,
4. recognizes the basic equipment for the production of cosmetic products and uses it to obtain selected cosmetic products,
5. predicts the results of the conducted syntheses,
6. independently performs color cosmetics (lipsticks, mascaras, powder), for body washing, hair and for oral care,
7. evaluates the pH of cosmetic products,

Social competence

1. works according to the Principles of Green Chemistry during the production of cosmetics and household chemicals,
 - works independently and in a team,
 - works carefully in dealing with raw materials for the production and analysis of cosmetic products,
- maintains an environmentally friendly attitude during the production of cosmetics and shows the ideas of mutual relations between man and the environment,