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| Filled in by the Study Programme Committee | Module (course block) name:  **COSMETIC CHEMISTRY** | | | | | | Module code C.1 | | |
| Course name:  **Cosmetic chemistry I** | | | | | | Course code: C.1.1 | | |
| Organisational unit conducting the course/module:  **UNIVERSITY OF APPLIED SCIENCES IN ELBLĄG** | | | | | | | | |
| Study programme:  **COSMETOLOGY** | | | | | | | | |
| Mode of study:  **Full-time** | | | Study profile:  **PRACTICAL** | | | Study Cycle:  **FIRST CYCLE** | | |
| Year/semester:  1/1 | | | Course/Module status:  **OBLIGATORY** | | | Course/Module language:  **Consultation in English** | | |
| Form of tuition | lecture | class | | laboratory | project | | seminar | other (indicate) |
| Course load (hrs) | **15** | **7** | | **8** |  | |  |  |

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| Course/Module coordinator | **prof. dr hab. inż. Waldemar Wardencki** |
| Lecturer | **prof. dr hab. inż. Waldemar Wardencki** |
| Course/Module objective | Familiarizing students with properties of chemical substances, with particular emphasis on understanding the function and effectiveness of chemical substances as components of cosmetic agents used in cosmetics and cosmetology, as well as basic concepts and laws of chemistry.  Familiarizing students with basic laboratory techniques and methods in the field of inorganic and organic chemistry. |
| Course/Module entry requirements |  |

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| **LEARNING OUTCOMES** | | |
| Learning outcome/ group of outcomes number | Learning outcome description | Study programme learning outcome code |
| 01 | Knows the basics of general, inorganic and organic chemistry | K\_W03 |
| 02 | Knows the groups of inorganic and organic compounds used in cosmetic preparations. | K\_W03 |
| 03 | Knows the principles of water acting as a solvent and ways of its treatment for cosmetic and laboratory purposes. | K\_W05 |
| 04 | Can perform chemical calculations and formulate conclusions based on these calculations. | K\_U22 |
| 05 | Can apply basic laboratory techniques. | K\_U20 |
| 06 | Can perform basic laboratory tests. | K\_U20 |
| 07 | Can work in a group, can coordinate teamwork, demonstrating communication skills. | K\_U43 |
| 08 | Performs tasks in a way that ensures their own safety and the safety of the environment, including compliance with work safety regulations. | K\_K04 |

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| **COURSE CONTENT** |
| **Lecture** |
| Basic concepts and laws of chemistry. Chemical bonds. Physicochemical properties and reactivity of elements. Properties and applications of selected inorganic joints. Proper solutions. Aqueous solutions of bases, acids and salts – dissociation and pH scale. Oxygen, properties, reactive oxygen species. Water, its purity and methods of its treatment for cosmetic purposes. Dispersed systems, emulsions and microemulsions. Chemical thermodynamics of reversible and irreversible processes. Phase equilibrium. Sorption processes. Chemical kinetics. Methods of separation of substances. Sampling for analysis. Fundamentals of methods of analysis of chemical compounds. Selected methods of chemical analysis of inorganic and organic compounds. Elements of organic chemistry. Basic classes of organic compounds and their properties. Becoming acquainted with the technology of production of various forms of cosmetics (creams, tonics, shampoos, soaps) and general guidelines for launching them on the market |
| Classes |
| Basic chemical calculations used in cosmetics and in the laboratory:  - conversion of solution concentrations,  - principles of preparation of solutions of the desired concentration,  - calculation of pH of solutions,  - buffer solutions.  Properties of chemical compounds that constitute the ingredients of cosmetic products.  Presentation of the principles of safe use of cosmetic raw materials. |
| Laboratory |
| Occupational health and safety training in the laboratory.  Determination of pH of acid, alkali and salt solutions by application of various methods.  Detection of selected cations and anions.  Determination of water hardness.  Analysis of selected functional groups in organic compounds. |

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| Basic literature | 1. Sarbak Z., Jachymska-Sarbak B., Sarbak A., Chemia w kosmetyce  i kosmetologii, Wydawnictwo MePharm Polska, 2013. 2. Sionkowska A. (red), Chemia kosmetyczna Wybrane zagadnienia, Wydawnictwo Naukowe UMK, 2019 3. Jones L., Atkins P., Leroy L., Chemia ogólna. Wydawnictwo PWN, 2020. |
| Supplementary literature | 1. Kołodziejczyk A., Kosmetologia, tom1 i tom 2, Wydawnictwo Lekarskie PZWL, 2019. 2. Molski M., Chemia piękna, tom 1 i tom 2. Wydawnictwo PWN, 2021. 3. Kranc R., Farbiszewski R., Kosmetologia. Podstawy naukowe, Wydawnictwo MedPharm, 2016. |
| Teaching methods | Lecture with multimedia presentation, calculation exercises, laboratory  exercises. |

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| Learning outcomes verification methods | | Learning outcome/ group of outcomes number |
| Written test | | 01, 02, 03 |
| Test based on classes material | | 04, |
| Observation of the student during laboratory exercises.  Short entry tests. Report on laboratory exercises. | | 05, 06, 07, 08 |
| Form and terms of awarding credits | Passing the calculation exercises (weight 0,2), obtaining a passing grade for laboratory (weight 0,3), obtaining a passing grade in the final test based on lecture material (weight 0,5). | |

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| **STUDENT WORKLOAD** | | |
| Type of activity/tuition | Number of hours | |
| Total | Including activities related to practical professional preparation |
| Participation in lectures | **15** |  |
| Independent study |  |  |
| Participation in classes, laboratories, workshops, seminars | **15** | 15 |
| Preparation for classes, laboratory, project, seminar, practical classes | 15 | 15 |
| Preparation of a project, essay, etc. |  |  |
| Preparation for examination/credit awarding test | 10 | 5 |
| Participation in consultation hours |  |  |
| Other |  |  |
| **TOTAL student workload in hours** | **55** | 35 |
| **Number of ECTS credits for the course** | **3** | |
| **Number of ECTS credits relevant to practical professional education** | **1,3** | |
| **Number of ECTS credits for classes which require direct participation of lecturers** | 1,1 | |